AMERICAN VETERINARY REVIEW,

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EDITORIAL.

SECOND CONGRESS FOR THE STUDY OF TUBERCULOSIS.—We have been furnished with the official call of the meeting of a second congress, instituted for the study of tuberculosis. It is to be convened in Paris on the 27th of July and will continue in session until the 2d of August, under the presidency of Professor Villemin, and all physicians and veterinarians are invited to participate in the discussions. The following questions will be considered: First, the identity of human tuberculosis with that of the bovine and the ovine families and other animals. Second, the bacterian and microbian associations of tuberculosis. Third, the hospitalization of tuberculous individuals. Fourth, prophylaxy of human and animal tuberculosis. Fifth, agents which, while destructive to the bacillus of Koch, are harmless to the human organism in respect to the question of the prophylaxy and the therapeuty of human and animal tuberculosis.

Gentlemen proposing to unite with the constituency of the congress are requested to address Mr. G. Masson, 120 Boulevard St. Germain, Paris, notifying him of their intention, and enclosing a postoffice order for twenty francs. All communications are to be directed to Dr. L. H. Petit, 11 Rue Monge. The committee of organization includes a large number of veterinarians.

Each member will be entitled to the volume containing the entire transactions of the congress, and it would seem that this second meeting, comprehending the discussion of so

many questions of leading interest by the *elite* of the profession, and twice gone over, can hardly fail to be followed by results of great interest and value to the cause of medical science at large, and that a full report of its proceedings will be likely to be widely in demand.

Since the date of the first congress, now several years ago, many subjects, both collaterally and directly related to the main topic, have engaged the public mind, and have received due investigation, including the theory and practice of the Koch system. And with reference to this alone, and the important question of its satisfactory success, or partial failure, and its true and *proved* position in scientific and practical estimation, the convocation of the new congress would be justified, as well as the expectation of obtaining new and important light upon a subject of literally vital interest, upon many points of inquiry which are still waiting solution.

Veterinarians especially will, no doubt, take great interest in the coming discussions, and we hope to be able to lay before our readers at an early day a complete and satisfactory review of the congressional labors.

It is to be hoped that some of our associations may in some of their meetings also take hold of this subject. Tuberculosis is rather prevalent than otherwise on this continent, and we cannot afford to ignore the efforts that are in progress among our transatlantic brethren to discover some of the things still in doubt in relation to the matter in hand.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.—Veterinarians throughout the country must have felt surprised at the fact that the Excelsior State has for many years been the only one in the Union which considered itself able to omit from its catalogue of institutions of civilization and refinement such a body as a State Veterinary Association, representing the interests of the profession in the commonwealth at large.

There were, it is true, some local societies, and somewhere good work was sometimes done; but, with these exceptions, since the demise of the old New York State Veterinary Society, which occurred some six or seven years ago, there

has been no veterinary organization in existence where scientific or professional subjects could be presented or discussed. It was, therefore, with a feeling of relief and with some hopes, and the best of wishes for its success, that we learned of the organization of the new State Society, and with pleasure that we published the news of the new departure taken by the veterinarians of Western New York, and of the events which transpired at the meetings held January and July last and January of the present year.

While looking for a notice of the second semi-annual meeting, which was to have been held this month, we received the following letter from Dr. N. P. Hinkley, the Secretary, which explains itself:

"It has been decided by the officers of the New York State Veterinary Medical Society to postpone the holding of the semi-annual meeting of the Society until Wednesday, August 12th, 1891, at 9 o'clock, A. M. It has also been decided to hold the meeting in New York City in order to accommodate the members from the eastern part of the State, and to comply with the requests of several veterinarians of New York and Brooklyn, who are taking considerable interest in matters pertaining to veterinary legislation, as brought before the annual meeting of the Society in January, 1891."

We hope to be able in our next issue to print the program of the meeting, and we take this opportunity to urge our New York colleagues to take advantage of this gathering of veterinarians and to turn the occasion to the best possible account. They can make it available for much good if they will only take the right course.

PROF. C. B. MICHENER, D.V.S., Assistant Chief of the Bureau of Animal Industry.—Some men appear to be made of such solid material that no amount of hard work seems able to impair their stamina or produce any injurious effect on their general constitution. Others, again, of less resistant *vis*, though sometimes propelled by great impulsive energy and will-power, at last break down suddenly and collapse at once from sheer inability to *go on*, and are compelled to stop in order to recuperate and rebuild shaken health. This last

condition is well illustrated in the professional life of Dr. E. Salmon, the present Chief of the Animal Bureau. With comparatively delicate health, he has, however, within a few years accomplished an immense amount of work, and it is our sad duty to announce that for a while he is compelled to relinquish his active professional life. He is in good condition to take a rest, however, and relieve himself from the anxieties connected with his oversight of the work of his Bureau. The Secretary of Agriculture having already created the position of Assistant Chief of the Bureau of Animal Industry, and appointed to fill the position a veterinarian well known to the profession, well acquainted with the work and prospective duties of the Bureau, and possessed of great administrative abilities, there will be no break in the work, and the machinery of administration is not likely to stop, or even rub.

Professor C. B. Michener, D.V.S., received the appointment on the 28th of May and began his duties on the 1st of June. He has now removed from New York and transferred his residence to the city of Washington. The Doctor has our best and most sincere wishes, and we feel sure that the Bureau will find in him a thoroughly competent and faithful officer.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The following notice was received at a late honr from the worthy Secretary of the Association:

SPECIAL NOTICE.

To all delegates in attendance at the Convention of the United States Veterinary Medical Association:

The Committee of Arrangements have selected Willard's Hotel as headquarters. A rate of $3.00 *per day will be given all delegates in attendance.*

The Convention will be held in Willard's Hall, in the hotel building.

All delegates and members in attendance will register at the respective desks of the Eastern, Central and Western Reception Committees, and all information will be furnished at these points.

The veterinarians of Washington and Baltimore will tender a lunch to all in attendance on the 15*th of September.*

A banquet will be given at Willard's hotel on the evening of the 16*th, at a cost of* $7 *per plate.*

An excursion to Mount Vernon on the 17*th is in contemplation, special rates being conceded to the members.*

ORIGINAL ARTICLES.

KOCH'S METHOD WITH TUBERCULOSIS

AND THE EARLIER USE OF CORRESPONDING PRODUCTS IN OTHER CONTAGIOUS DISEASES.

By James Law, F.R.C.V.S., Cornell University, Ithaca, N. Y.

(A Paper read before the New York State Veterinary Medical Society.)

(Continued from page 126.)

April 21st I inoculated a yearling heifer, No. 7, in the tail and left flank with sterilized lymph from the flank of No. 4, killed the same day. The lymph had been kept for hours at 140° to 150° F.; there was no local nor general reaction.

April 27th I inoculated No. 7 and another yearling, No. 8, with sterilized lymph that had been heated to 140° for several hours. There was no reaction.

Agril 22d I inoculated a yearling in the left lung and in the trachea, with fresh lymph from No. 4, just killed. In all, one and one-half ounce of the liquid was employed. From April 24th to 30th the temperature ranged in the main, 104° and 105°, and thereafter to May 20th, oscillated between 104° and the normal. Swellings appeared in the neck and in the left side in the seats of inoculation, pulse and breathing ranged high, but no distinct lung symptoms were observed. The local swellings subsided to two hard masses, like hickory-nuts, and the general disorder disappeared. Later, at the post-mortem examination, this animal showed a small sequestrum in the left lung, and old false membranes on the pleura.

EXPOSURE OF THE ABOVE TO INFECTION.

On July 15th I sent three of the survivors to Christopher Slade, Whitehall, Baltimore Co., Md., to be kept in his infected stables, and three to Mr. W. W. Hubbs, Newtown, Queens Co., L. I., to be placed with his infected herd in the close buildings of a town dairy.

Three months later I heard from both gentleman that not one of these cattle had shown a sign of lung plague.

TABLE SHOWING LUNG PLAGUE INOCULATIONS.

No. of Subjects.	INOCULATIONS.		Intervals between Inoculations.	Inoculation with Lymph of Acute Lung Plague.	Cohabited with cases of Lung Plague.	Time from last Sterilized Injection to Exposure to disease.	Results.
	With old Sequestrum of Lung Plague.	With Lump of Acute Lung Plague Sterilized by Heat.	Days.	Time.	Month.	Days.	
2	2 times.	.....	42	1	3 months	28	Nil.
1	2 "	.....	42	1	.....	28	"
1	.....	.....	.....	1	.....	.....	Lung Plague
2	.....	1 time.	.....	.....	18 days	13	Nil.
1	.....	2 "	5	.....	3 months	79	"
1	.....	1 "	.....	.....	3 months	79	"
1	.....	.....	.....	1	.....	.....	Lung Plague

FURTHER EXPERIMENTS WITH LUNG PLAGUE.

In August, 1883, I inoculated with lung plague exudate sterilized by heat on a number of cows going into dairy stables in New York and Brooklyn. One went into an infected stable in Seventieth St. and Second Ave., New York, and two went to McDonald's, Greenpoint, which was habitually infected. The dealer, P. McCabe, assured me a year later that none of these contracted lung plague.

April 3, 1884, I inoculated with similar sterilized exudate eight cows for J. Colman, five for —— Reilly, and nineteen for Mrs. Lynch, all in Eighty-ninth St., New York, seventeen for D. F. Murphy, Ninety-second St., and second for Mrs. Barry, Ninty-fifth St., and from the later reports of these parties I have reason to believe that all the cows operated on escaped the disease which habitually existed in the locality.

Twice I have had untoward results in herds wherein the plague existed at the time. In one case the diseased lung used to furnish the lymph was an unsatisfactory specimen, having little exudate in its substance, and the disease continued to occur in the herd. In the second case the only lung

available had throughout advanced into a state of firm, dry, granular hepatization and had a mawkish, heavy odor, and no thermometer could be found marking above 120° F.; as a result the heat employed failed to sterilize, and the tails swelled as under an inoculation with the unaltered virus. The result was protective, but many lost their tails, and one Jersey died in a herd of fifty head.

Most of these cases were reported to the Fourth International Veterinary Congress at Brussels in September, 1883. (See Compte Rendu of this Congress, pp. 496 to 501).

EXPERIMENTS WITH ANTHRAX.

N. O. Shepherd, Skaneatles, N. Y., had nineteen head of cattle attacked with splenic apoplexy January, 1883. In a few day he lost seven adult cattle and one calf, together with a mare and colt and one pig. Eleven cattle recovered. In March, 1884, he lost one heifer, in May three young calves, in June one mare, July 3d one horse and July 6th one yearling colt. The cattle first attacked grazed in a pasture in which was a swamp and where there had formerly been a slaughter house. The horses in 1884 were kept in an orchard into which drained the yard used by the infected cattle in 1883.

July 8th I visited the herd, obtained the requisite blood from a victim of the disease, heated it for an hour to 150° F. and injected twelve cattle with one drachm each of the sterilized product. One heifer remained, and by desire of the owner this was left as a test case. Within two days the thirteenth animal died of anthrax and the other twelve survived without illness.

In 1885 I operated in the same way on a large herd of cattle in Columbia County, N. Y., among which anthrax had appeared. This herd escaped without a single loss.

From the early eruption of symptoms and the rapid progress of anthrax it is especially favorable to such treatment in infected herds. The truly sick can easily be picked out, and the inoculation of the others is likely to prove protective. The shortness of the incubation, and, above all, the absence of

accult and chronic forms of the disease saves the operator largely from the dangers that beset him in such affections as lung plague and hog cholera.

EXPERIMENTS WITH RABIES.

1st. April 2, 1886, I injected hypodermically in the back of a rabbit (No. 1.) ten drops of a lactescent fluid made with the brain of a man who had died of hydrophobia March 30th. May 18th the same rabbit was again injected hypodermically with brain matter of a dog which died May 17th of rabies. June 14th (seventy-two days after the first inoculation) this rabbit was found paralyzed, the paralysis increasing the two following days, so it was killed June 16th and utilized for further inoculations.

2d. April 3d I injected on the left cerebral hemisphere of rabbit No. 2 the same fluid (from the human brain) used in No. 1. Rabbit was dull for three days, but ate its food. After this it seemed well and lively up to the 18th inclusive. April 19th in the morning it was paralytic but still fed. April 21st the paralysis had become complete, and the body was becoming cold. At 4 P.M. it was found dead. The attack came on on the 16th day after inoculation, the regulation time for rabies resulting from inoculation on the brain.

3d. April 3d I injected a black and tan terrier, No. 3, in the flank with twenty drops of the same fluid used for Nos. 1 and 2, but which had been heated for an hour to a temperature ranging from 150° to 180° F. April 19th and 20th two other inoculations were made in the flank with the same sterilized liquid as before. April 22d an inoculation was made on the cerebrum of a milky fluid made by mixing a portion of the medulla oblongata of rabbit No. 2, which died the day before, with boiled water.

May 17th the dog which had lost appetite for several days snapped at a stick and later at my leg. It was found dead next morning. It is noticeable that twenty-five days elapsed before symptoms appeared. The rule is that after inoculations on the brain symptoms set in in fifteen days; it is, therefore, reasonable to infer that the first inoculation with sterilized virus had conferred a partial insusceptibility.

4th. April 22d I inoculated in the back hypodermically a rabbit, No. 4, with twenty drops of the mixture of the medulla of rabbit No. 2, diluted with boiled water. May 18th the same rabbit was again inoculated with brain matter of the dog No. 3. This rabbit was found dead November 29th.

5th. April 22d I added three grains of medulla of No. 2 to six drachms water and heated for an hour to 150° to 170° F., leaving the vessel wrapped in a rug so that it remained warm till morning. April 23d heated the mixture till it began to simmer, and injected one drachm hypodermically in the back of rabbit No. 5. May 18th inoculated this rabbit in the back with brain matter of dog No. 3. February 24th, 1887, injected on the left cerebral hemisphere ten drops of a mixture of a healthy rat's brain and boiled water. April 15th this rabbit was in good health, when I had to leave him for Chicago.

In view of the claim that healthy brain matter inoculated on the cerebrum would kill in sixteen days by paralysis, on February 24th, 1887, I inoculated the brains of three additional rabbits with matter from the brain of a rat just killed, but all remained well when I was called by the United States Government to go to Chicago April 15th.

We have thus traced some landmarks of the incipiency and development of the doctrine of immunity by the use of the purely chemical products of the plague-germ. We have seen the principle applied in practice to anthrax by Touissaint in 1880. We have seen it applied to swine-plague by Law almost at the same date, and published in the Agricultural Report for 1880. We have seen it applied to lung-plague by Law in 1882, and recorded in the report of the International Veterinary Congress of 1883. We have seen it applied to swine-plague in pigeons by Salmon and Smith in 1886, and set forth in their paper presented to the Biological Society, Feb. 20th, 1886, "On a New Method of Producing Immunity from Contagious Diseases." Finally we have seen the experiment on rabies by Law in 1886.

Contrary, therefore, to the impression that Salmon and Smith inaugurated this method, the first successful step had been taken six years before by Toussaint, and the indispu-

table records show that I had a gratifying measure of success with three plagues five, four and three years respectively, before the successful experiments of Salmon and Smith, on which they based their "New Method." I say this in no disparaging spirit, as no one is more ready than I to acknowledge the great work that Drs. Salmon and Smith are accomplishing for the country. They can well afford to allow the justice of my claim to priority in this matter.

OBSCURITIES AND DIFFICULTIES IN KOCH'S METHOD.

While the basis of Koch's fluid is the chemical products of the bacillus of tuberculosis, the use to which he puts it, of a curative rather than a prophylactic agent, introduces an element of difficulty. The tendency of tuberculosis is to death of the tubercle. The chemical poisons may therefore be looked upon as necrosing ptomaines. It would seem therefore as if its sole profit must result from the expediting of this process. In a lupus, or other superficial tuberculous product, this may prove curative, but in the case of a tubercle imbedded in the depth of a solid organ, it puzzles one to see how the dead mass is to be eliminated and a recovery secured without a general diffusion of the contained bacilli. Koch himself allows that the bacilli are not all killed. And now Virchow, on the strength of twenty-one post-mortem examinations of individuals treated by Koch's method, asserts that it endangers the diffusion of the germ and the onset of a general tuberculosis. It now appears that some cases of lupus are refractory. Similarly it would seem as if the method would entail great risk in case of tuberculosis of the bowel. Here the resulting necrosis must endanger perforation of the intestine and septic peritonitis.

But again tuberculosis can hardly be classed among non-recurring diseases. Though its subject acquires in time a partial tolerance of the poison, yet this does not forbid a continuance of the tuberculous process for a long lifetime in man and beast alike. A temporarily dormant state of the disease does not hinder its breaking out anew in an acute and generalized form under unwholesome conditions of life. How

often do we see one or two calcified tubercles, in a system the subject of acute tuberculosis. *Prima facie*, therefore, it would seem as if tuberculosis did not belong to that class of diseases for which a personal immunity of a reliable kind could be acquired. But if so, is not benefit from Koch's method to be limited in the main to the process of local necrosis of superficial tubercle, and of such deeper formations as can be safely reached and removed by surgical means? It seems that the great bacteriologist himself is aware of this, and is calling in the aid of von Bergmann for the subsequent resection of the diseased joints. If the bacillus escapes from the necrosed tubercle into the adjacent living tissue the vitality and antagonism of which is reduced by contact with ptomaines, there is everything to favor the formation of a new colony.

Even the alleged value of the injection as a means of diagnosis is now falling into doubt. The febrile reaction sometimes occurs in the non-tuberculous, and some unquestionably tuberculous subjects do not show it. Koch justly claims a diagnostic value for the local reaction only. This may be itself incapable of diagnosis in internal tubercle.

On the whole there seems to be good reason for moderating the extravagant expectations with which Koch's tuberculosis treatment was heralded. Much of the unreasonable claims made for him was doubtless due to the high reputation of the author of the method, and his known habits of carefulness and thoroughness, but in this case his, perhaps too precipitate, launching of the fact of his discovery, and the mystery with which he surrounded its real nature fostered hopes and generated surmises, which he himself did not literally claim, and which have been to a greater or less extent doomed to disappoint. That Koch has inaugurated a method of great value for a limited number of cases of tuberculosis (the superficial, the incipient and those that can be supplemented by surgical measures) is undoubted, but for another class of these cases its value seems to me extremely apocryphal, and to expect from it an acquired and permanent immunity would seem to contradict the nature of the disease.

ECLAMPSIA—PARTURIENT APOPLEXY.

By Dr. Tait Butler, V.S., Davenport, Iowa.

In the December number of the REVIEW was published a very interesting article from the pen of Dr. W. L. Williams, of Bloomington, Ill., on "Parturient Eclampsia in the Mare."

In speaking of eclamptoid diseases attending parturition in various animals, he takes occasion to intimate that, in his opinion, parturient apoplexy in cows and eclampsia in women are diseases due to the same etiological moment, or rather that they are one and the same disease manifested in the two classes of subjects specified.

It has appeared to me that in the study of diseases veterinarians have been too apt to search for a disease affecting the human subject, bearing a more or less close resemblance to the one under consideration, and then taking it for granted that causes similar to those producing the former were responsible for the latter. Reasoning by analogy, in regard to such matters, may usually be correct, but it is by no means a reliable method of procedure in all cases, and to my mind the case at point is a marked example of its fallibility.

Dr. Williams, however, may have reached his conclusions by a correct system of careful reasoning, but a preponderance of evidence, as I see it, scarcely justifies such an opinion. In the interest of progress in the study of parturient apoplexy in the cow, it is important that this point be definitely settled. For if it is once fully demonstrated that these two diseases are due to the same causes, and that they are of the same pathological nature, then all discoveries in relation to the etiology, pathology and therapeutics of the one may be correctly applied to the other. Again, if it be decided that they are not due to the same nor similar causes, and consequently not identical in their nature, a position will have been reached conducive to a more thorough and original investigation of this fatal disease of cows. It is, therefore, with the hope of aiding toward this desired consummation that I attempt a short review of the subject.

The etiology and pathology of neither of these diseases are thoroughly understood, and therefore we shall first briefly review those clinical phenomena that numerous accurate observations have shown to be constant results of these diseases. The premonitory symptoms of the disease known as eclampsia parturientum are given by Lusk* as "headache, often limited to one side, vertigo, loss of memory, gloomy forebodings, flashes of light before the eyes, contracted pupils, amblyopia, sometimes amaurosis, ringing in the ears, dyspepsia, nausea, vomiting, dyspnœa, œdema of the face, of the labia majora and of the extremities, and finally, and of first importance, the presence of albumen and of casts in the urine." If there are premonitory symptoms of parturient apoplexy in the cow they are usually observed. However, Fleming,† after saying that "the disease sets in suddenly after calving and *without any premonitory symptoms*," states in the next paragraph that "in some instances before the symptoms commence, the lacteal secretion is either diminished or suspended."

Professor Williams‡ says, that "most commonly there are some premonitory signs. The secretion of milk is stopped, the cow hangs its head, ceases to feed, and paddles with the hind feet." From the foregoing it is obvious that a comparison of the prodromata can be of but little value in deciding the question at issue; but one or two points seem worthy of notice. The most important and, in fact, the only constant premonitory symptom of parturient apoplexy is a more or less extensive diminution in the lacteal secretion. This is not recorded as a premonitory symptom of eclampsia in women. Another point worthy of notice is that œdema of the face and extremities is one of the most reliable signs of approaching eclampsia in women, but in parturient apoplexy in cows this condition is never present. Again, amaurosis is quite a common premonitory symptom of eclampsia, but no record of it in such a connection is made by veterinarians.

* "Science and Art of Midwifery," page 561.
† "Veterinary Obstetrics," page 657.
‡ "Principles and Practice of Vet. Med.," page 495.

It is frequently seen in pregnant cows a short time before, or at term, but such cases are not followed by parturient apoplexy. Of course, when well-marked coma becomes established amaurosis is present in this as well as other diseases, but it does not bear the same relation to parturient apoplexy in cows that it does to eclampsia in women. These, it will be observed, are important differences, even in the prodromata, sufficient to more than offset any similarity which might seem to exist.

We now come to a consideration of those symptoms revealed to the physician without a physical examination. In eclampsia in women these are as follows: The face, which at first presented a livid pallor, rapidly changes its outlines. The eyes roll in their orbits and the lids open and close rapidly. The pupils are dilated and insensible to light. The mouth is distorted and usually drawn to the left side. The eyes became fixed on that side toward which the commissure of the lips is drawn. The jaws rise and fall spasmodically, while the projecting tongue is lacerated by the teeth. Blood and saliva form a froth that dribbles from the mouth. From the head the convulsions extend to the neck, body and limbs, frequently producing a true state of opisthotonos. The respiratory muscles being implicated, breathing is momentarily stopped. The face becomes red, swollen and tumified as in asphyxia, and the carotids beat heavily. Abdominal evacuations usually occur, but that of urine is not very frequent "*owing to the small amount of urine in eclamptic patients.*"* These phenomena are all usually presented in from twenty to thirty or forty seconds, and are followed by a varying period of rest and sopor, usually succeeded by another and still another attack.

The corresponding symptoms of parturient apoplexy in the cow are, hanging of the head, alternated with general uneasiness, heavy and fast breathing and difficulty in standing, and especially in moving the hind parts. When the animal is no longer able to stand a position is usually assured

*Carpentier, "Cyclopedia of Obstretrics and Gyneoclogy," translated by Grandin, vol. II., page 112.

of a more or less diagnostic character—the head, being brought back to the left side, lies against the shoulder. Periods of sopor or coma are usually alternated with those of delirium. During these latter the eyes look wild and staring, the lids twitch and tears flow over the face. Violent delirium may occur at short intervals, but usually the coma rapidly increases, to be broken only at long intervals, or at death, by delirious movements.

It will be observed that the most striking point in this class of symptoms of the two diseases is the great prominence of *convulsions* in women and of *coma* in cows. This difference is sought to be explained by a fancied higher development of the nervous system of the former. Numerous observations of the phenomena exhibited during all stages of parturient apoplexy have never revealed a single genuine convulsion, except perhaps the throes of death might be so considered. Moreover, we have never talked with a veterinarian on this point that a little careful questioning did not prove his so-called convulsions in parturient apoplexy to be none other than stages of delirium. The marked difference between delirium and convulsions is usually overlooked by veterinarians, but I do not deny the possibility of their occurrence in parturient apoplexy. I merely state that I have never seen them, nor have I had satisfactory evidence of others having seen them. Lack of nervous development certainly does not explain their rarity or absence, for we have seen as many as *thirty-seven genuine convulsions in a cow*, due to gastric irritation produced by eating too freely of "hotel slops;" not delirium, but genuine convulsions, occurring at intervals of from two to thirty minutes, and lasting from thirty to ninety seconds.

Thus far in our examination of the subject there has been an apparent, if not real, similarity between the two diseases, but no more than exists between other two entirely distinct diseases occurring in either class of subjects. Moreover, with this the resemblance ceases, and a consideration of the clinical history and the symptoms revealed by a physical examination indicates such a difference in phenomena that it is

remarkable that the diseases can be considered identical either in etiology or pathology.

A physical examination of the human subject reveals a rapid, weak pulse, ranging from 100 to 140 beats per minute. The temperature, according to Hypolite, ranges from 100-4° F. to 104° F. and in the majority of cases rises from the beginning to the end of the attack. Between the convulsions it falls only slightly, to rise again with the return of the spasms. There is usually but little urine in the bladder, consequent upon a diminished secretion immediately preceding the attack. In fact, complete anuria exists in many cases.

A similar examination of the cow in parturient apoplexy reveals a pulse which, during the stages of delirium occurring at the beginning of the attack, is slightly increased in frequency; but as the disease advances and coma becomes well marked, it is *slow and weak*. The temperature gradually falls from the beginning until death, or until the disease begins to abate; with, perhaps, a slight upward tendency during the stages of excitement which usher in the disease. The bladder is usually distended with urine, owing to an increased secretion immediately preceding the attack, and in no case is anuria a present until after well-marked paralysis.

From the above we notice that in women the pulse is *fast and weak*, temperature *high*, and urine *scant;* while in the cow the pulse is *slow and weak*, temperature *low*, and urine *abundant*.

It is usually sought to explain away these differences, as well as all others, by the erroneous assumption that they are due to the differences in the organisms affected. The physiological differences between the two classes of patients, although slight, might account for certain trival differences in the clinical phenomena, but neither comparative physiology nor actual clinical experience justifies the belief that they account for a high temperature in the one patient and a low temperature in the other.

All authorities on human medicine agree that in women sufficiency from eclampsia the temperature is elevated above normal. Veterinarians are equally unanimous that in cows

with parturient apoplexy the temperature is lower than normal, or at least that it is not elevated. *Will Dr. Williams please inform us of a single example of a disease affecting women and cows, known to be due to the same causes and possessing similar pathological lesions, where this difference in temperature is admitted?*

My statement of the condition of the pulse in cows is, I am aware, antagonistic to the "authorities," but personal observations led me to doubt their accuracy on this point, and an extensive correspondence with practical veterinarians, instituted for the purpose of deciding this question, indicates that my experience is fully corroborated by theirs.

Neither is the statement that the urine is abundant in quantity in cows with parturient apoplexy quite in harmony with the views of all veterinarians, but if applied to a period immediately preceding the attack, or during its early stages, that statement is strictly correct. The distended condition of the bladder so frequently met with by the veterinary practitioner is due to an established law, applicable to the cow as well as other mammalia and explicable by perspicuous physiological facts, namely, that during a variable period immediately following parturition the secretion of urine is greater than during any other equal period of health. It is, therefore, the opposite condition in women which all writers agree indicates the approach of eclampsia and marks its early progress.

A review of the clinical history of the two diseases reveals the same striking lack of coincident facts. In women "age does not appear to have any great influence as a cause, although it is between twenty and thirty years that eclampsia is most frequent, but this is not surprising, since it is at this age that women are more likely to become pregnant."* Parturient apoplexy appears in neither young nor old cows.

In women "primiparity is without doubt the most frequent predisposing cause. Most authors will agree in this."†

* Carpentier, "Cyclopædia of Obstetrics and Gynecology." Translated by Grandin, II. page 95.

† Ibid.

The average, computed from the records of twenty-one eminent writers, is 3.24 primiparæ to 1 multipara; but Madame Lachapelle puts it as high as 7 primiparæ to 1 multipara. Parturient apoplexy does not occur in primiparæ no matter at what age they first become pregnant. Not one case is recorded as occurring in a primipara and few will be so bold as to assert that all cows become pregnant before maturity, and that hence maturity and not multiparity is the important factor to be considered in this connection. For a preponderance of evidence certainly indicates that age and primiparity act in diametrically opposite directions in the two diseases.

According to Bailly the disease occurs in pale and anæmic, as well as in strong and vigorous women. In cows, plethora accompanied by maturity seems to be an essential condition, or at least is nearly always present. A large development of the lactiferous function also seems a necessary condition to the disease in cows, but no mention is made by writers on human medicine of such being the case in women.

"The influence of the length of labor in the production of eclampsia is undisputed."* Moreover, "the longer the labor, the more difficult the delivery, . . . the more depressing is the outlook."† Among veterinarians it is equally undisputed that parturient apoplexy never follows a long nor difficult period of labor. In women there appears, in a large majority of the cases, to be a direct connection between the act of parturition and the disease, but in cows no such direct connection can be discovered. In the former an attack of the disease at any time during pregnancy is almost invariably followed by labor, while in the cow such a result, providing it be conceded that the disease occurs before labor, is by no means so common. According to Depaul more than 93 per cent. of the cases of eclampsia in women occur before or during labor, but in the cow it is safe to say that 99 per cent., if not all, of those cases of true parturient apoplexy occur at from twelve to forty-eight hours after labor.

* Carpentier, "Cyclopædia of Obstetrics and Gynecology." Translated by Grandin, Vol. II. page 96.

† Lusk, "Science and Art of Midwifery," page 564.

In women "eclampsia predisposes to post-partum hæmorrhage,"* but parturient apoplexy occurs only when such rapid and thorough contraction of the uterus has taken place as to preclude the possibility of post-partum hæmorrhage.

We have now arrived at a point where a consideration of the etiology and pathology of the two diseases would appear appropriate. The impression irresistibly forced upon a student of the literature on the subject is that, in this field, there is much speculation and more uncertainty. During the whole history of the disease known as eclampsia in women, theories calculated to explain its nature have followed one another in such rapid succession as to be absolutely bewildering. Many have been ingenious, others have explained satisfactorily certain phenomena of the disease, but none have fully met the exact requirements of medical science. However, there are two theories that have received more attention than all others combined. These are, first, that "eclampsia is due to œdema cerebri and the sequential anæmia" (Traube-Rosenberg theory); second, that "eclampsia is due to the retention in the blood of all the effete materials which find their excretion by means of the kidneys."† (The theory of minæmia).

The former is founded on the *fact* that there is intercranial hæmal obstruction, the result of an altered condition of the circulation produced by increased aortic pressure, and the *supposition* that the resulting cerebral hyperæmia is always succeeded by œdema and anæmia. This is the theory borrowed, by veterinarians, to explain the phenomena of parturient apoplexy, notwithstanding that it has been discarded by the majority of writers in human medicine. It no more meets the full requirements of the case in veterinary than in human medicine, but when its validity is questioned veterinarians are always ready with the question, "if hydræmia and increased blood pressure are not the cause of parturient apoplexy, what is?" I freely confess that I don't know, but I do know that eclampsia can occur entirely independent of hydræmia, or increased aortic

* Lusk, "Science and Art of Midwifery," page 563.
† Spiegelberg.

pressure (the two principal causes of œdema and anæmia cerebri) as in cholera, where the opposite condition exists."* The theory of urinæmia is the one most generally accepted in human medicine, nearly all writers and practitioners agreeing that if it does not, in all cases, account for the entire phenomena of eclampsia it certainly has much to do with its causation. But it is impossible that urinæmia could be the cause of parturient apoplexy, for there can not be urine intoxication without suppression of urine, and that condition, as before stated, is not present.

Having discussed this point at considerable length in a former article which was published in the REVIEW, it is not considered best to occupy space with a rehearsal.

ACTION OF COLD APPLICATIONS AND OTHER AGENCIES UPON BODILY TEMPERATURE.

BY KENELM WINSLOW, B.A.S., M.D.V., M.D., M.M.S.S., Instructor in Therapeutics and Materia Medica at the Veterinary School, Harvard University, etc.

The writer wishes to express himself as heartily concurring in the general sense of the remarks so ably set forth by Dr. Macaulay, in the VETERINARY REVIEW for March, concerning the use of cold applications in the treatment of pneumonia; more especially so because it appears as if this were the line upon which improvement in antipyretic treatment was to be brought about. While particular stress will be laid upon the advantages to be derived from the use of cold, it is far from the purpose of this article to seem to depreciate the co-operative value of other antipyretic measures.

Dr. Macaulay makes a strong point in emphasizing the fact that counter-irritation has a tendency to unfavorably diminish respiratory movements in pneumonia. It does this not only mechanically, by making respiration painful, as that writer shows, but also through stimulation of the inhibitory nerves governing respiration.

Exception must be taken, however, to the statement that

* Billings, "Eclampsia Parturientum," Journal of Comparative Medicine and Surgery," Vol. V. page 127.

a rise of temperature is produced by counter-irritation. Ellenberger (Lehrbuch der Allgemeinen Therapie der Haussäuge thiere), page 307, has by proven that neglecting the slight transitory rise of temperature occasioned by the primary stimulation of the calorifacient centres, and accompanied by contraction of the peripheral vessels, increased cardiac action with diminished rate of respiratory movement; neglecting these, we repeat, which are merely ephemeral, the permanent effect is a great reduction of temperature, owing to the loss of heat from the weakened and dilated vessels, and also to the fact that the heat-forming centres become exhausted by over-stimulation.

This is what happens with extensive counter-irritation, and it is remarked by the same authority, (loc. cit.), that this effect has only been temporarily interfered with when such irritation has occasioned a great deal of movement of the animals experimented upon.

Extensive counter-irritation may, therefore, be regarded as an antipyretic agency, but it is doubtful whether it is a judicious procedure mainly on account of its general harassing effect upon the patient.

As heat and cold are employed almost interchangeably in the treatment of similiar conditions, it may not be out of place to digress a moment to contrast the action of the two.

Extreme heat and cold are alike in their effect upon animal tissue, causing paralysis of the vasa motors, passive congestion, inflammation, destruction of tissue and death. It is also a curious fact that the sensation occasioned by intense heat and cold are similar, for it is reported that the natives of India in first handling ice said they could not hold it because it burned their fingers. Moderate heat locally applied has a soothing effect upon the nerves, vessels become dilated, tissue metamorphosis is increased, parts are relaxed and softened, and suppuration and sloughing favored. On more remote parts, heat, as in the application of counter-irritants to the chest, causes the intra-thoracic vessels to be reflexedly contracted, blood is drawn to the surface of the parietes by the mechanical effects of vascular dilatation there; pain is relieved by some such action as occurs in the use of the twitch,

in veterinary practice; the respiration is slowed, the heart stimulated, and temperature reduced.

Moderate cold applied locally has also a s ıtive and benumbing effect; the vessels become constricted, tissue metamorphosis is diminished, the parts are constringed, and swelling is reduced. Suppuration and sloughing if they occur, progress but slowly. The writer has often seen abscesses treated unwittingly by ice bags, when the pus was turned out of the consistency of ice cream, and the whole nature of the process was literally that of a very "cold abscess."

The consideration of the more remote effects of cold will be deferred until later.

Antipyretic treatment, with which we will mostly deal, may be classed for convenience into three divisions, depending upon the three factors concerned in calorification in the body. The afore-mentioned factors are; heat production, heat dissipation, and heat regulation. These elements are controlled by nervous centres whose exact localization is as yet undetermined.

Heretofore reliance has mainly been directed to increasing heat dissipation in fevers. This has been accomplished in great part through the agency of diaphoretics, combined with the use of cardiac sedatives or general stimulants as the case demands, and such has been the classical method of symptomatic treatment in fevers. On the other hand, the more modern or "true" antipyretics influence the calorifacient centres to lessen heat production.

The employment of these recent synthetic compounds, of the so-called aromatic series, seems to be on the wane. Their usefulness has been said by one author, seemingly of agnostic tendencies, to consist in enabling animals to die with a normal temperature—no great satisfaction, surely, to the unprofessional owners of our patients.

Finally, we have such agencies as cold irrigation, and other applications, which not only directly and physically abstract heat, but improve and affect the heat regulatory functions, and apparently have a much deeper and farther reaching action than any other antipyretic measure.

It has been proved that the wonderfully beneficent effects

of cold are due essentially to the general excitation or invigoration it produces on the nervous system. The various results thus effected by cold external applications have been admirably described by Dr. Whittier, in his address at the annual meeting of the Massachusetts Medical Society, 1890.

The following are among the most important of these: an improvement of innervation of the circulatory, digestive, respiratory and excretory organs, with a lessening of tissue waste. The failing digestive functions are reinvigorated, general nervous irritability is relieved by the action of the cooled blood on the nervous centres, in coursing through the brain, and a general tonic and stimulating effect upon the nervous system is in this way brought about.

But lest in advocating too strenuously this antipyretic remedy, we are accused of basing our conclusions on purely hypothetical reasoning, let us now turn to the practical results afforded by it. Are we not immediately confronted by statistics, in the domain of human medicine, mounting up into the myriads of cases, proving the vastly superior merits of this kind of treatment? And this, too, not only in the treating of typhoid and other continuous fevers, but even in the case of pneumonia and kindred affections, which are especially unsuitable for such treatment, in the eyes of the laity, and, indeed, of many professional brethren, because forsooth! these diseases are said to result from cold, an entirely irrelevant and unphilosophical conclusion, allowing that their premises are correct.

Cold doubtless predisposes to catarrhal and pulmonary disorders, but it is extremely questionable whether it is the primary factor often, and the manner of "catching cold" is a very different matter from the mode of giving it remedially. Dr. Fenwick, in an analysis of one thousand cases of pneumonia treated in the London hospital, finds that the mortality when cold was used, in one form or another, to be only ten per cent as against twenty three per cent with the employment of any other method of treatment. The number of cases treated with cold was one hundred and eight.

Considering the close pathological connection which influenza has in relation to pneumonia, how the former tends

to merge into the latter, it seems as if the cold treatment should be as applicable in one case as in the other. This antipyretic measure is indicated as a rule in all septic or essential fevers, when the vital processes are endangered by the continued high temperature. It is contra-indicated in symptomatic or catarrhal and other self-limited febrile disorders when the system is not thus threatened.

It is not within our province or scope here to discuss what such dangers, occurring in the course of fevers, are; but they may be said briefly to include general inanition due to excessive tissue waste, and loss through exudative processes; cardiac failure owing to increased functional activity, degeneration of the myocardium, and possibly to the direct effect of the blood poison on the heart; disturbances of the sensorium occasioned by the great heat of the blood; and finally, parenchymatous degeneration of various organs, as of the heart, kidneys, liver, spleen, and muscles. The cold bath, ice-cradle, and like measures, are ostensibly unsuited for veterinary purposes. The employment of the wet sheet, sprinkled occasionally with cold water and maintained in position till the temperature falls, and followed by vigorous rubbing and dry blanketing, or the method of which the cold wet blanket is covered by a rubber sheet, and then with dry blankets, forming what the Germans know as the "Priessnitz" application, seem the most practicable procedure. For the latter is claimed the advantages belonging to both refrigerants and counter-irritants. First; cooling occurs from the physical abstraction of heat and then reaction takes place with vascular dilatation, revulsion of blood to the surface, and a soothing effect follows, which the moist warm heat produces, resembling altogether in its secondary action, a hugh, light poultice. As far as the objections to the use of such cold applications are concerned, it seems that the only particular difference between its adaptability in veterinary practice and in human medicine, lies in the fact that the bodies of our patients are completely covered with hair, and therefore need to be more carefully protected for a longer time against the danger of too long-continued evaporation.

The writer feels that it is rather humiliating to be unable

to bring forward practical results of such treatment as herein advocated from personal observation, although he hopes soon to be in a position to do so, but a somewhat extensive hospital experience in this treatment of human beings first called his attention to the advantages that might accrue from the adoption of these measures in veterinary practice. If by thus attracting notice to this subject sufficient interest in the matter is exciting to induce practitioners to test the efficacy of cold applications in febrile disorders, this attempt on paper will be amply rewarded.

Other methods of using cold, as by cold draughts, clystser, ice-bags, etc., have not been touched upon for lack of time, but they are none the less valuable adjuvants.

A word in closing as to the advisability of lowering bodily temperature in fever. Increased temperature, although the most prominent symptom in fever, is oftentimes not the most dangerous element. Witness the tremendous progressive tendency towards a fatal termination in many septic disorders where the system seemed to be utterly overwhelmed by the profound impression made upon the whole organism by the effect of the poison, whatever it may be. It seems to be generally accepted that the nervous system is the fundamental factor concerned in the loss of co-ordination of the heat regulatory centres, whereby the heat formation is increased, and heat dissipation diminished, in this manner producing the group of symptoms we recognize as fever.

The exciting cause may depend upon bacterial origin, which again in its turn gives rise to ptomaines, combining in this manner the chemical and zymotic theories of causation into one, or it may be due to halmic alteration, traumatism or other source of nervous irritation. It appears that heightened temperature and the increased oxidation and resultant decomposition in the body occasioned by fever, are inimical to the etiological factors that cause fever. It is even asserted that in intermittent fever the non-febrile period merely affords an interregnum in which the pugilistic bacteria can reinforce themselves for the febrile attack, and, partially succumbing to the increased body heat which they themselves occasion in the course of the onslaught, are forced to retire until they

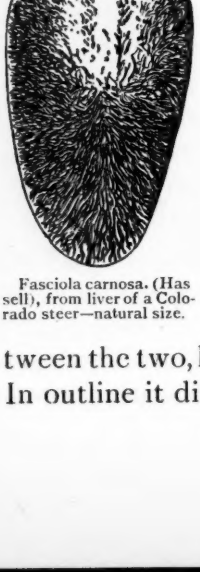
are sufficiently recuperated for another assault. In other words, as has been more tersely and less grandiloquently stated, the bacteria light the fire which ultimately consumes them. Thus is the *vis medatrix naturæ* again exemplified. On the other hand, the condition of the body may determine to some extent, the existence of fever. For it is said that crisis or lysis in fevers occurs either because the cause of the fever has been destroyed, or because the heat centres have become exhausted. In the latter instance fever is re-established with the recuperation of the calorifacient centres.

But is it not a reasonable proposition, that while fever may be a remedial agency in its way, yet like any other potent measure, it must be controlled and kept within bounds, as in using a drug of great efficacy we must regulate the amount administered, else what may be its power for good become transformed into an instrument for evil.

A NEW SPECIES OF TREMATODE INFESTING CATTLE.

By Dr. Albert Hassell, Veterinarian, Baltimore, Md.

In the collection of the Bureau of Animal Industry is a bottle containing specimens of a trematode new to science, of which I give the following character: *Fasciola carnosa* (nov. sp.)



Fasciola carnosa. (Hassell), from liver of a Colorado steer—natural size.

Body flat, elliptical in outline, very thick, margins straight; mouth terminal, lip circular with triangular orifice; acetabulum small, circular, with triangular aperture; genital pore small, situated midway between the mouth and acetabulum. Length, 45 millimetres; breadth, 22 millimetres at widest part; habitat, liver and lungs of ox.

In general appearance this parasite differs from the fasciola hepatica (Linn) and fasciola gigantea (Cobbold) in many characteristics. In point of size it is intermediate between the two, having an average length of about 45 millimetres. In outline it differs from either by having no defined head

and neck, the body increasing in size gradually from the anterior extremity to the widest portion. The posterior extremity is rounded, not pointed as in F. hepatica. Its color is slate blue on the ventral surface, due to the intestine being visible under the skin. The skin, apparently smooth to the naked eye, is seen on examination to be covered with minute spines, much smaller than those covering the body of F. hepatica. The genital pore is situated midway between the mouth and ventral acetabulum. The intestine is plainly visible under the skin and consists of two main branches arising from the termination of the œsophagus, and passing directly downward in the centre of the body, being separated from one another by a very narrow space, giving off in their course numerous branches which divide and subdivide, making the intestinal arrangement appear more complicated than either that of F. hepatica or F. gigantea. Each final subdivision ends in a cœcum. The specimens from which this description is taken have been in alcohol four years, and are not in condition to give accurate anatomical details. On some future occasion I may have an opportunity to describe its structure more definitely.

ACUTE DYSPNŒA.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Philadelphia, Pa.

Dyspnœa in general, when occurring in our domestic animals, is seldom an object for therapeutic interference. If we exclude the so-called "heaves" of horses, which only demands attention from its forensic significance, the dog only, in his better situation, remains for our consideration.

The usual variety in the dog develops itself insidiously in the course of his life, unnoticed by the owner; it is the consequence of obesity, of cardiac weakness and dilatation and of fatty metamorphosis of the heart; or it is met as a sequence of diseases of the chest and abdomen. The question then has to do with a chronic dyspnœa, with a difficulty of respiration which increases with the lapse of months and years.

The remaining variety is the subject of this discourse. This afflicts an animal as an idiopathic lesion, independent of

a precursory or a contemporaneous disease; its influence is operative only for a brief period, ten minutes, and after its expiration the victim experiences no subsequent inconvenience. Very probably this disease has already been frequently observed, but it has only come under my notice in the last decade. The two cases observed by me are as follows:

Case I. A healthy, well nourished, fat, eight-year-old pug dog became attacked with symptoms of the most intense dyspnœa. From the apparent danger in which the animal's life was suspended, he was rapidly brought to the hospital for small domestic animals attacked to the Berlin veterinary college. Before this was reached, however, the patient had recovered his normal respiration. During a lapse of twenty-four hours of close observation, no new attack occurred, and the animal was discharged; but hardly a half hour passed after his reception into the house of the owner before a recurrence happened, which was as severe as the first paroxysm. I answered as soon as possible the request that I should treat the dog, but although only twenty minutes had elapsed I arrived too late; the dyspnœa was past. Upon entering the room I found the dog had assumed a half sitting posture, with his feet over the side arm of the sofa in the corner of which he had had the first paroxysm; he appeared much exhausted, and viewed his surroundings as though all was strange to him. Something was evidently wrong with him; nevertheless, an alteration of the organism, which could account for the attacks, could not be found. Auscultation as well as percussion gave negative results. In three-quarters of an hour he dismounted from the sofa, ate sugar, and drank water; later, at the invitation of his mistress, he was ready to take a walk.

Guided by the history, I thought the difficulty lay in a spasmodic closure of the glottis, and prescribed extractum hyoscyami 0.30 g. in 30.0 g. of mel. desp., to be given within six hours. A third occurrence has not been noted since.

Unfortunately I had not an opportunity to observe the symptoms of the case myself; but according to the detailed account of the owner, they were those of the greatest respiratory need: opening of the mouth and extension of the

tongue with cyanosis of the visible mucous membranes; associated with these was a rattling tone, emitted both upon in and expiration.

Case II. An eight year old gelding of the better breed, became sick with a bronchial catarrh, which terminated favorably within a week. During the disease the general health was disturbed but in a slight degree. From the 6th to the 8th days the patient could be led in the open air; the animal being so lively, and his actual condition not speaking to the contrary, it was deemed advisible to harness him to a wagon. I left directions that in two days the horse might be used for his usual task. Before 7 o'cloek on the second day after this disposition of the case, I was informed that the horse was threatened with suffocation. At my arrival I found him perfectly sound, and by the most painstaking investigation, which was principally confined to the thorax, I could discover nothing of a morbid nature. On the same day about noon the attendant came with the same word, and the result of my second examination was precisely as the first. A coachman expressed himself as believing that he had observed the animal eating before both attacks; this caused me to throw some food into the manger.

This was half consumed with great eagerness and appetite, when the horse moved suddenly back from the trough, and with separated limbs, distended head, and dilated nostrils, concentrated his thoracic and abdominal muscles in efforts at respiration.

The heart pulsation could not be felt, but the movements of the flank numbered 60-65 per minute; anal movements were also present, from the heavy breathing. Eyes were widely open, and indicated great anxiety; mucous membrane of the nose and mouth were cyanotic; the gluteal region was covered with perspiration which rolled in small streams down upon the limbs.

Before I had concluded what should be done, the symptoms suddenly ceased, so that in less than ten minutes the attack was past. Gradually the breathing became more quiet and the animal observed his surroundings with a blank stare; the sweat was removed and in a few minutes he ate the bal-

ance of his oats. No new attack was noticed during the next three days, and the horse was put to work. More for the purpose of quieting the owner, than with the expectation of receiving any benefit therefrom, a course of treatment was instituted which consisted in doses of ext. hyoscyamus given in electuary.

The cause of the dyspnœa in both these cases is a mystery. When we consider that the heart and lungs of both patients were sound, and that in other respects their functions were in no degree deficient, we are justified in coming to the conclusion that the cause was a temporary one, dependent upon transitory circumstances which were instrumental in affecting an irritation upon the respiratory center. A relationship between these cases and asthma, hysteria and similar attacks depending upon neuroses, cannot be admitted, because the latter affections are of the recurrent and chronic nature, and manifest themselves from time to time.

According to physiology, the center which presides over the rythmical movements of the lungs, is situated in the medulla oblongata, at the point of origin of the vagu and accessorius nerves; up to the present time it has not been determined whether the activity of the same is automatic, or reflex. But experiments make it apparent that there are reflex fibers in the constitution of the tenth pair. Through these irritations the pulmonary movements are influenced in either an inhibitory or an excitative manner. The former is brought about by the expanded lungs; the latter by the collapse of those organs. In this manner a self-regulation of respiration is generated, and a compensatory rythmus obtained.

All diseases of the lungs, heart, and their surrounding membranes modify the rapidity and depth of the breathing; another factor which is active in bringing about the same end is a condition of incomplete decarbonization of the blood. The disproportion in the gaseous constitution of the blood must not of necessity involve the blood in all vessels; it is sufficient when this poverty is local and confined to the vessels of the medulla; when e. g. through a hinderance of any kind a retarding of the venous flow from the brain, by which the blood is richer in carbon dioxide and destitute of oxygen.

We will now resume the individual consideration of the cases. The dog was exposed to all the pampering and fondling that pet dogs usually receive. Nothing was denied him, and in short, the beast ruled his whole surroundings. He was accustomed to go daily either walking or riding; on the day of his first attack the weather was rainy and the owner was not well. Consequently when the animal manifested that it was time to go out, he was denied in an uncivil tone; the dog quietly sought his corner, and after about one hour received the first paroxysm. It is known that individual members of the species canis familiaris, especially lap dogs, have a strongly developed sensibility; they rejoice and mourn with their master, and can, by being isolated from him, be cast into illness. With unkind treatment they show anger and disgust; these by friendlier and closer association, as a rule soon pass away and in a short time are totally eradicated from the memory of the dog.

In my opinion of this case, the harsh words and disappointment were the real promoters of the attack; both caused a psychical alteration which directly induced disturbance of the respiratory tract in the medulla; probably in the following manner: the dog became vexed, and this caused increased respiration and cardiac movements with accelerated blood circulation in the brain and cord; this, when united with the plethoric state and age of the patient, gave rise to a cerebral congestion through which a misproportion in the blood gases was promoted and which disturbed the respiratory center. The second attack was due to his sojourn in the hospital and to the excitement of again seeing his owner.

Since a metaphysical activity in equina caballus is completely out of the question, it is necessary to seek another source of the irritation upon this center. As already mentioned, this animal was a gluttonous feeder; such masticate so rapidly that isochronous respiration is impossible. But these fast eaters do not fall sick of dyspnœa; here however the subject was in the stage of convalescence, he was hyperæsthetic. This latter fact, and the undecarbonized state of the blood, resulting from the irregularity in respiration, were sufficient to affect the respiratory center.

It may be upheld by some, that I had to do with spasmus glottis, or an œdema of the glottis. The occurrence of the former in our patients is yet to be proven; and the characteristic tone which accompanied respiration, as well as the sudden disappearance of the dyspnœa would certainly not speak for œdema glottis. Œdema of the glottis cannot develop suddenly, without previous inflammatory changes, and it cannot, within ten minutes suddenly disappear, without influencing the health of the animal. The tone was not a whistling or rattling, as accompanies suffocation symptoms, and which rapidly terminates fatally, but a regularly made noise both upon in- and expiration. I do not believe the therapy had the least effect upon the course of the dyspnœa.

PILOCARPINE IN TETANUS.

Translated by the same.

Dr. Luigi Casati successfully treated three cases of traumatic tetanus in man, by the use of pilocarpinum hydrochloricum. Two of these were given this drug exclusively, and one received it in conjunction with other medicines. Besides these results, the same authority succeeded in healing seven of nine rabbits that had been inoculated with tetanus cultures. In all the cases the recovery followed rapidly, and after a few hours nearly all the symptoms had vanished, the trismus disappearing last.

From these observations, Casati came to the conclusion that pilocarpine was the most powerful therapeutic agent against tetanus; further, that it was the best, if not the only extant antidote for the ptomainic excretions of the tetanus micro-organism.

Considering the circumstance that the treatment of tetanus in the horse, up to the present time, has been exceedingly speculative and uncertain, and that one can hardly decide from a single trial, I took occasion to institute a series of experiments with the remedy so highly praised and recommended by Casati.

At sundry times within a short period, there have come

under my care six horses suffering from tetanus; all of which I subjected to this treatment, with the result that five terminated fatally, and one recovered. I am not inclined to increase the list of trials with the alkaloid, and I desire, therefore, to be allowed to make a detailed report upon these six cases.

I. Three and a half year old, medium weight, draught mare, well nourished. According to the unreliable testimony of the attendant, the same had received a wound upon one of the fore limbs; upon examination only a few hairless spots could be detected about the fetlock. The course of the case was slow, and at no time was a well defined trismus present. After receiving chloralhydrate in the drink water, and æther sulphuricum in the rectum three times a day—the same treatment being pursued throughout six days—there was no bettering of condition. On the eighth day the patient was given 0.4 g. of pilocarpine dissolved in 5.0 g. aqu. distill. subcutaneously. The characteristic working of the medicament commenced within a few minutes and lasted one hour; salivation, diaphoresis and defecation, associated with nervousness, were well defined.

Respecting the easing of the spasm, I think the same occurred after twenty minutes in the ileospinalis and gluteal muscles; this diminution of the opisthotonous, which altogether was scarcely perceptible, remained some time after the disappearance of the symptoms caused by the injection. On the next day the muscular cramp had its original intensity; an improvement could not be noted. On the following day symptoms of a broncho-pneumonia were detected, and after this, from the thirteenth to the twentieth days, the æther and chloral were resumed. On the twenty-ninth day the subject was delivered to the owner. There was more or less want of agility in locomotion, as well as a slight degree of trismus still noticeable.

II. Nine-year-old light draught mare. Punctured wound; tetanus not in so developed a stage. Received chloral in drink water, and 0.4 g. of pilocarpine, injected; no cessation in spasms. On the third, she was given 0.2 pilocarpine which induced the usual symptoms, but did not cause a diminution of the contraction; during the same afternoon

another dose was given and also followed by profuse salivation, great anxiety and unquiet; animal died ninety minutes later, showing increased pulse and respiration.

III. Six-year-old riding gelding. Punctured wound, as in the previous case. This patient also grew worse after the incorporation of chloralhydrate in the drink. No abatement of the spasms after receiving 0.2 g. of pilocarpine hydrochloricum; we injected 0.4 g. pilocarpine on the third day, and after three minutes observed severe salivation; after ten minutes, defecation and bedewing of the surface with perspiration; very unquiet and excited; respirations increased in number, and became dyspnœic in character, until twenty-five minutes after, the case died under symptoms of suffocation.

IV. Uncertain age, middle weight draught gelding. Doses of 0.4 g. and 0.5 g. pilocarpine, subcutaneous, but a relapsing of the convulsions even during the strongest working of the medicament could not be confirmed. On the fourth day the animal died with symptoms of suffocation.

V. Nine-year-old well bred, heavy carriage mare. This was the third horse belonging to this owner, which, in the short period of a year, had died of tetanus, in the same stall. [It is hardly necessary to state that the owner was warned of the necessity of removing the floor and earth in this stall, and also to disinfect the same with sublimate solution].

In the clinic we found the pulse to be 48, respiration 48, temperature 100.7° F. (38.2° C); a swelling upon the left forelimb, but no wound. A few hours after admittance into the hospital, the case received 0.4 g. pilocarp. hydroch., which produced great excitement; animal could, with difficulty, remain standing; countenance betrayed great anxiety. It was impossible to distinguish the slightest relaxation. The approach of the attendant called forth the severest paroxysms, so that the clysters of 60.0 g. of æther were only given by the greatest care. Death came at midnight of the second day. Post-mortem showed a sero-hemorrhagic inflammation of the podophyllus tissue upon the sole of the left anterior foot. The exudate, when inoculated in experiment animals, produced tetanus.

VI. Very old and thin experiment mare. Inoculated with

a pure culture of the tetanus bacillus on the 2nd of January; on the 7th the first symptoms appeared, and on the same day the patient was given over to the clinic. Pulse 60, respiration 32-36, temperature 100.0° F. (37.8° C). The morphalogical picture of tetanus was complete: position characteristic—ears, neck and limbs stiff and hard, tail raised and carried out of the median line. At 2 o'clock P.M., the incisors could be separated only sufficiently wide to pass two fingers into the mouth. Patient removed to the slings, and at 2.40 P.M. took a subcutaneous injection of 0.4 g pilocarpine; the working, which appeared in five minutes, continued three hours, and was very severe. Defecation occurred eighteen times, and the salivation lasted two hours; pulse 80, respiration 52. A spasmodic intermission was not observed, but on the contrary, the contractions were more intense, and so progressive, that in three hours one finger could with difficulty be introduced between the teeth.

Toward morning of the same night, the case had to be removed from the slings, in order to prevent suffocation, and remained apathetic upon the floor until 1 P.M., on the eighth of January, when the animal died under symptoms of intense opisthotonos.

As is known, congestion and œdema of the lungs, together with dissolution of the blood, and fatty degeneration of the heart muscle, are the most prominent and constant pathologico-anatomical alterations found in tetanoid cases.

Since the changes just mentioned,—especially the lung œdema—occurs in the tetanoid process, whether it be of long or short duration, and compromise the life of the patient, it would seem, reasoning *a priori*, that death is induced earlier through the hypersecretions of the bronchial glands, which is ascribable to the physiological action of pilocarpinum hydrochloricum. In the foregoing cases the fact that death rapidly followed the injections, confirms this view.

RUPTURE OF THE STOMACH.

By Claude D. Morris, V.S., Bath, N. Y.

Having read the interesting communication in the Review for April, by Dr. Johnson, on the rupture of the

stomach in the horse, and after an experience of ten cases in a period of three years practice, I determined that the next opportunity I had I would make a more careful examination with a view of finding a solution to the question, vis: Why is it that the rupture in the external coat is of greater extent than in the internal or mucous coat?

On the morning of April 23d I was called to see a mare suffering from what the owner supposed to be colic. When I arrived at the farm, only two miles distant, I found the animal lying rather quietly. On getting a history of the case, I found that she had been at her usual labor the day previous, but on returning to the stable that evening she refused food, and manifested a slight degree of pain. She was allowed to stand for a short time before anything was done, thinking perhaps she might get over her trouble.

Later the animal received the usual "farmers" dose, soda bicarb. ℥i to iii water q. s. This not seeming to give the desired effect, about two hours later the animal was given a second dose, using the owner's expression, composed of three tablespoonfuls of saleratus and a teacup of vinegar. Immediately after receiving this dose the animal manifested symptoms of great pain. The owner then gave one os of tn. opii which seemed to quiet her. She was left for the night. In the morning they found her rolling and acting very uneasy, also perspiring slightly; it was at that moment that my services were sought. Upon examination found the pulse 75 and irregular, temperature 103° F., respiration 40. Gave opium and cannabis indica, also hot injection, which resulted in a free evacuation. Left three doses of opium and colocynth, to be given between then and noon, with an occasional enema.

On returning, found that she had lain quiet since my first visit, bowels had moved and micturation occurred. Pulse 80, very feeble, temperature 104° F. respiration 60. We got the animal upon her feet, which occasioned very distressing symptoms; there was a discharge from both nostrils, (a white froth), under lip pendulous, mouth partially open, tongue protruding. Frequently the animal would cramp the head against her breast, and would back around in her box. These symptoms pointed to rupture of the stomach, of which I

apprised the owner. Left full doses of morphia, to be given hypodermically every hour, and would return in the evening. At that time I found every symptom of rupture argumented, so positive that I wanted to destroy the animal as an act of mercy.

The owner would not listen to this, as she was the family pet. She died during the night; I made a post-mortem in the morning, and found the stomach ruptured, in the manner that Dr. Johnson speaks of, viz: That the peritoneal coat was torn about one and one-half inches at each end of the orifice more than that of the mucous coat, and that the torn edges through the centre of the aperture were more gangrenous than at the ends, while the torn edges of the inner coat presented the same appearance all through. The lesions were situated about one-third the distance from the greater curvature and at right angles with the posterior gastric arteries through the villous portion. This animal had shown indications of pain four days prior to her last sickness, and I have no doubt but that the indurated condition through the centre of the external aperture were due to preexisting rupture. I can only account for the preexisting rupture of the external coat, and that it is of greater extent than that of the mucous coat in this way: that the external coat is a serous membrane and practically inelastic, while that of the internal is a mucous membrane and quite elastic, and would, therefore, allow of greater dilation. On examining the stomach of the horse we find this: that the mucous coat is soft and velvety, and lays in small folds or rugæ. When we consider the structure, and the distention that this organ can assume, one can easily understand how an inordinate distension could rupture the external coat, before allowing any such lesion to occur in the internal coat. When the stomach is fully dilated normally, the mucous membrane is not strained in the least, chymification is uninterrupted; whereas, on the other hand, were the mucous membrane so dilated as to be tense, it would interfere with the secretion of the glands, and chymification would cease. Nature has been most beneficent in this, in allowing the animal to eat to the greatest desire, without materially interfering with digestion.

REPORTS OF CASES.

RHEUMATISM CAUSED BY FEEDING MILLET.

By F. H. FANNER, Vet. Student, Hillsboro, North Dak.

In the hope that the following cases may be of some interest to the readers of the REVIEW I have been induced to forward them for insertion. During the last three months, while practicing with Dr. B. C. Taylor, V.S., of this place, we have had the opportunity of observing rheumatism in its various forms. About the middle of last January our attention was called to four or five cases of rheumatism inside of one week. At that time the weather was fine and had been for some time previous, so we were obliged to look to something besides bad or wet weather, which is said to be the chief exciting cause of rheumatism. These cases had all occurred in good, dry, well-ventilated stables, but it was noticed that they all had been fed millet for some time and got no other hay or very little grain. New cases kept increasing, so much so, that by the last of March we had over one hundred cases on record. Most all these cases was characterized by pyrexia, sweats and acute shifting inflammation of the joint tendons and other structures.

Case I. On February 22d last I was called a distance of five miles to the farm of Mr. R. Standleys, to see a large bay gelding said to have got very bad on the road coming from town. After arriving at the place the owner informed me that some three or four of his horses had been affected with some peculiar trouble like rheumatism for some weeks; found bay horse standing in stall breathing fast, flanks tucked up, tenderness of the abdominal muscles, and could only move with great difficulty, pulse quick and hard, temperature 103°.

In the next stall was a bay mare with articular rheumatism in one hock joint. Next was a pony mare heavy in foal affected in both hock joints, which were very much swollen. This mare was so bad that they had her in slings; pulse accelerated and hard, temperature 102° F.

Gave bay horse 7 drachm ball; left ʒ ii doses three times a day, also sodii salicy. ʒ ii doses three times a day; left pot. nit. sodii salicy. equal parts for the other cases, to get a tablespoonful three times a day. These cases all recovered rapidly.

Case 2. A horse three years old suffering from acute rheumatism lying and able to move only when assisted; had been bad for about four days, pulse 66, hard, and temperature 104° F. tendons below knees and hocks very much swollen and sore to the touch. Gave a purgative and left nit. pat. ℥ 4 doses three times a day ex. colchicum fl. ʒ i doses every four hours. On the third day he began to improve and could stand in slings. Changed treatment to sodii salicy. ʒ ii doses three times a day. This case improved slowly, taking about three weeks before he could walk about.

Case 3. A blue bull chestnut mare nine years old, heavy with foal, afflicted with articular rheumatism in the left stifle joint; suffering much pain, could not bear a pound of weight on afflicted leg and would hold it up off the floor most of the time. Pulse quick and hard; temperature 102½°, respiration hurried. Treatment: gave e. bellad fl. and left nit. pot. ʒ ii three times daily; sodii salicy. given three times daily; applied an anodyne liniment on stifle joint. March 27, mare down not able to rise; put slings on and raised her up; appetite good, urine high colored. Applied blister to stifle joint, added to the above treatment ext. balchici ℥ ii three times a day. On March 29, not much improvement. Changed treatment to sodii hyposul. ℥ ss doses three times daily. March 30, she lost her foal and died a few days after herself.

Case 4. A bay gelding twelve years old taken very bad with muscular rheumatism, could only move with great difficulty. Muscles of the chest very sore when pressed upon, particularly the intercostal muscles, constituting pleuradynia. Muscles of right shoulder very much swollen, pulse 70, temperature 104½° F. respiration hurried. Gave a laxative ali lini. Pat. nit. in ℥ ss three times daily E. colchici ℥ i doses every four hours, the third day changed treatment to sodii salicy ℥ ii three times a day. This case recovered rapidly with the exception of the right shoulder, which formed a large abscess.

Case 5. Admitted to barn in April 22, suffering from acute rheumatism. Could not bear to be touched and after standing a while could scarcely move at all. Pulse 72, temperature 104, respirations much increased. Gave ali lini ℥ ss E. bellad fl. ℥ ss also E. colchici fl. ʒ i every four hours. Next

day pulse 60, temperature 102°; changed treatment nit. pot. ℥ ss sodii salicy ℥ ii sodii hyposul ℥ ss three times daily. Recovered slowly.

I communicate these few simple cases more to show you the line of treatment we have passed than to enlighten you on the pathology of the disease. However, there is no doubt in my mind but lactic or some other acid accumulates in the body, and the symptoms are directly referable to the action of this poison upon the system. Why millet should cause rheumatism, I will leave for some veterinarian to explain, but to confirm the fact that it does: 1st. Every case we have had had been fed millet for some time; 2nd, that farmers that had prairie hay and did not have any millet, did not have any rheumatism; and 3d, when stockmen found out that millet was injurious and stopped feeding it they did not have any more new cases.

RABIES IN THE HORSE.

W. H. Dalrymple, M.R.C.V.S.
Veterinarian, State Experiment Station, Baton Rouge, La.

The animal to which my attention was called on Friday last, the 1st of May, was an aged chestnut gelding and the symptoms presented were as follows, viz.: On my first examining him he exhibited trembling of the superficial muscles of the body: a jerky movement of the lips; stiffness about the throat with his nose kept slightly elevated; occasionally biting at his breast and sides, as if trying to bite an insect that was stinging him; the eyes clear, and expressing a good deal of excitability; the pulse quicker and more frequent than normal; was informed by the owner that the horse's bowels were very much constipated, and I prescribed a dose of laxative medicine, which was given, after some difficulty.

The following day, the foregoing symptoms were somewhat aggravated with the exception of the bowels, which had responded slightly to the action of the medicine. While tied to a tree in a lot at back of owner's house, the horse would at short intervals bite at his breast, at the trunk of the tree, then at some branches that overhung his head; he also

made frequent attempts to bite some hogs loose in the lot.

On visiting the animal on the third day, I found the point of each shoulder and the forelegs just above the knees, perfectly raw from his tearing and biting at the parts with his teeth; his thirst seemed great, but when water was offered, after swallowing two or three mouthfuls, spasm of the throat would take place and he would draw back from the bucket of water as if in dread of it; this, however, was simply the result of spasm, as he would again partake of a mouthful or two, which was again followed by a similar spasmodic action of the throat. During intervals of a few minutes each which gradually became shorter, the horse would stamp with his fore feet, then throw himself down violently and commence attacking his legs ferociously, just like a hungry dog worrying a bone, and during this attack his whole frame appeared to be under the influence of the spasm, and his urine seemed to be passed involuntarily. After a few seconds and evidently with some difficulty he would regain his feet, commence nibbling grass for a minute or two, but apparently unable to swallow; then a return of the former symptoms would take place, only in a more aggravated form, and in more rapid succession, with a flow of saliva from the mouth. The symptoms became more intensified until the horse became paralyzed, was unable to rise and died that evening.

I have been informed that some dog or dogs in the neighborhood, suspected of being "rabid," have been destroyed, and as this horse was turned out on the commons, when not at work, it is quite probable he may have been bitten by a rabid dog. I had no opportunity of making a post-mortem.

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

SUPPURATIVE NEPHRITIS—SEQUELÆ OF INFLUENZA.

BY DR. E. NESBIT, D.V.S., HOUSE SURGEON.

This case is more likely to prove interesting to a practitioner of lengthy standing than to one who, like myself, has but recently entered upon practice.

The readers of the REVIEW will, we hope, accept this report

without subjecting it to too critical an examination, in view of its object, that of furnishing an interesting addition to our pathology. The case under review is that of a chestnut mare, six years old, used for light road work. When first coming under our notice she was suffering with pleuro-pneumonia, from which she apparently thoroughly recovered under the ordinary classical mode of treatment. She soon after became sick again, with what appeared to be at first a simple case of sore throat, but which developed into a well marked case of influenza, which soon assumed a typhoid character. The temperature rose and fell, varying three or four-fifths between 101° and 102°; the pulse varying also from 48 to 60, though still fairly strong; and respiration was somewhat accelerated. Her appetite was fair, eating from four to six quarts of food daily, and the bowels moving quite naturally, though in a few instances slightly diarrhetic. The loins were flexible, though not to an extreme degree, and she moved freely in her stall, lying down comfortably and rising easily, with no cough or pain. She remained in this condition for some time, without any apparent change, irrespective of what treatment was pursued, and quinine, anti-pyrine, alcoholic stimulants, and milk seemed to be equally without effect.

Suspecting that her typhoid condition might be due to some of the circumstances of her surroundings, she was placed in the ambulance and carried to the hospital.

She here maintained about the same condition as at the commencement of her sickness, though she had lost both flesh and strength, and her appetite still continued to be good.

One morning it was noticed that her hocks were swollen, and that she was very stiff behind, and suspecting rheumatic trouble, salicilate of sodæ was prescribed, and partially relieved her, but never entirely. The inguinal regions also were somewhat œdematous, with perhaps a somewhat increased soreness on pressure of the loins, but withal, the same exhibition of general symptoms, and the comparatively regular execution of all the vital functions, a slight increase in the quantity of urine being, however, observed. She continued in this way, steadily losing ground, notwithstanding all our efforts, until one morning she was found to be unable to move in her

stall. Her hind legs were greatly swollen; and, in turning round, her feet became entangled in the stall, and she fell down. Made comfortable as well as possible, she was left in that position with some hope that she might be improved by the rest. But when called upon to get up she was found to be utterly unable to do so, and, notwithstanding all efforts made to assist her, she died during the night.

The post-mortem proved to be one of much interest. All the organs of the body were anæmic, and all the muscles were pale. The lungs and the pleural membranes were healthy; the pericardial sac contained about two and one-half ounces of serosity; and the heart was hypertrophied; probably a "compensatory hypertrophy," the walls of the ventricles being very much thickened. The cavities of the heart contained large ante-mortem clots, as did also many arteries of the body, these clots varying in size in the different arteries, the renal being entirely clogged, and the most minute subdivisions of the blood vessels in the substance of the kidneys were also entirely filled. The kidneys also presented other most interesting lesions, both being much enlarged, the left weighing fifty-seven and one quarter, and the right forty-four and one-half ounces. These organs also presented great abnormality in their dimensions, the left being nine inches in its long axis and seven in its width, and the right measuring eight inches in length by six in width. The celiular tissue surrounding them was very much congested, together with the capsules of the organs. The left was irregularly lobulated on its great circumference, and a section of the substance showed numerous patches of congested and inflamed tissue, including six isolated abscesses, containing from one-half to one drachm of pus. The right kidney contained no abscesses, but was much congested and inflamed in patches. The bladder was in a normal condition, and contained about one pint of urine, which was neutral in reaction and contained much mucus and some sugar. All the other organs proved healthy. Microscopic examination of the tissues of the organ was not made.

FATAL INDIGESTION IN A DOG.

By the Same.

The subject of this report is a water spaniel, about three years of age. He was, apparently, in perfect health one night, and on the following morning was found dead. The suddenness of the death and the apparent good health of the animal immediately previous excited the curiosity of the owner, and the cadaver was sent to the hospital to undergo a post-mortem in order to discover the cause of death.

In making the examination I found a congested condition of the stomach, and packed in the organ a disgusting mass that would weigh from six to seven ounces, while beyond the stomach the alimentary canal was in a normal condition, excepting that near the rectum there was a portion from two and one-half to three inches in length that was spasmodically contracted.

In different parts of the intestinal tract were *large pieces of bone, and pieces of coal,* in the same course. The liver presented a normal condition, as also did the gall bladder. The spleen was normal in appearance. The pancreas were slightly congested, as were also the kidneys. The lungs were normal and the heart was in the same condition. The lesions noticed do not justify a positive conclusion as to the cause of death. The probabilities are that it was caused by indigestion, because of the congested condition of the stomach, and the offensive mass found in that organ, together with the large pieces of bone and coal, or grit, found in the posterior portion of the alimentary canal.

DANGER OF BAD CHLORAL BALLING—SERIOUS GLOSSITIS AND STOMATITIS ITS RESULTS—EXCELLENT EFFECTS OF PEROXIDE OF HYDROGEN.

By Dr. E. Ackerman, D.V.S., House Surgeon.

The patient was a large gray gelding, seven years old, owned by Barnum & Bailey. He was taken sick during one night, and as the ordinary medical attendant of the stables could not be reached, the watchman of the stable called upon one of a large horse dealer close by, who attempted to administer a chloral ball, which he broke in the horse's mouth, without afterward washing it out.

When we saw the patient the next morning, the tongue was hanging out of the mouth; there was a profuse salivation, and the animal was unable to eat. The appearance of the mouth showed that the horse had chewed the chloral. The gums around the molar teeth, the mucous membrane of the cheeks and tongue, especially on the left side, as well as the gum around the lower incisors, were horribly burned, the epithelium was sloughing off by large patches, and the mouth, lips, and cheeks were very much swollen. His temperature was up to $104\frac{1}{5}^{\circ}$. A sling was advised for the tongue, to be placed in the mouth, and cold, astringent gargles of honey, vinegar and water to be applied as often as possible.

This was continued for a day or two, when the man in charge removed the sling and allowed the tongue to hang out, as he said, to let the horse put his tongue in the cold water. This was bad practise, as the horse held his tongue always between his incisors, biting it, and cutting off the circulation to an extent which endangered the sloughing of the anterior portion of the organ. The slings were immediately re-applied and the patient ordered to the hospital, where he entered the same day, April 22. The horse then had a temperature of 101°, the mouth and tongue were very much swollen, and very raw, the gums being extensively ulcerated at the base of the incisors and molars; and a *very fœtid odor* and *profuse*, *thick*, *repulsive* discharge of saliva escaped from the mouth. The horse was totally unable to eat anything, whether soft or even liquid food. The mouth was then gargled with a three per cent. solution of creolin, and swabbed thoroughly with a ten per cent. solution of peroxide of hydrogen. On the 23d there was no change, the fœtid odor being still very much marked, and the mouth so sore on the left side that the patient would not allow it to be touched. The mouth was syringed again with creolin, when large pieces of sloughing membrane came away. The buccal cavity was then *sprayed* with a thirty per cent. solution of peroxide, renewed three times a day. For the first time the animal partook, though with great difficulty, of some green grass.

On the 24th the temperature was normal; the smell of the mouth had greatly subsided; the wounds of the mouth looked

better; the saliva was still abundant. The same treatment was continued. On the following day the strength of the peroxide solution was raised to forty per cent., and then sprayed in the mouth. From this time forward everything assumed a better aspect. The smell of the mouth had all disappeared; the sloughs were all thrown off; the wounds became of a more healthy aspect; the edges showed the formation of the new layer of epithelium; the saliva was less abundant, and the animal began to eat. The rapidity with which the peroxide acted in this case was surprising, the improvement being more and more perceptible after every application of the H_2O_2. The horse was discharged on the 3d of May, if not entirely recovered, at least rapidly on the way toward complete restoration to health.

Evidently in this case H_2O_2 has proved the best medicinal agent for trouble of this kind, and for any foul-smelling ulcers of the mouth. It destroys the odor at once, and imparts a healthy appearance right from the start, if sprayed on immediately after the wound has been thoroughly cleaned.

CARELESSNESS IN DIAGNOSIS.

By the Same.

There is nothing of great interest in this case, beyond the hint which it conveys of the importance of care and correctness in diagnosis.

The patient was a small lap dog, brought to the hospital with the history that, though treated for three days by a prominent city veterinarian, he still would not eat, and was constantly salivating. The owner did not know what name the veterinarian had given the complaint at his first visit when he first saw the dog, but on the second day afterwards he told the owner the dog had a severe sore throat, and gave her a liniment to apply externally, with a prescription to administer internally.

On examining him, I failed entirely to discover any symptoms of sore throat. But I found the breath very fœtid, with continual salivation, and the tongue hanging out of the mouth, and the owner said the animal had rapidly emaciated, and had

not eaten for the last three days. Looking for a cause for the bad breath and protruding tongue, I examined the teeth and found them all right, but looking further back in the mouth I discovered a piece of sharp bone, about an inch long, with a sharp fang, which had become implanted in the gum just behind the left last molar, and was lodged directly across the mouth, just over and behind the base of the tongue. This was extracted without any difficulty, and the little animal immediately relieved of his "traumatic difficulty of deglutition."

EXTRACTS FROM FOREIGN JOURNALS.

PILOCARPINE IN INDIGESTION OF SOLIPEDS.

By Mr. Cadix.

The author was twice called, on different occasions, to attend horses suffering with all the symptoms of gastric and intestinal indigestion, and had applied the ordinary forms of treatment by ether, sulphate of sodæ, acetate of ammonia, stimulating teas, etc., without gaining any advantage. Finding his patients getting worse, he then had recourse to eserine, which he injected under the skin in doses of ten centigrams, but still without obtaining the slightest improvement.

Having then decided to use the acetate of pilocarpine, he injected subcutaneously ten centigrams of it in ten grams of distilled water. The result of this was extremely satisfactory, the ptyalism, which is the first effect produced by the admintration of the drug, being almost immediately followed by the dropping of fæces, and in a short time the two patients were looking for their feed.

In a third and similar case, taking advantage of his experience with the two previous patients, he again employed the same remedy, and had the satisfaction of relieving his patient in about an hour. The conclusions of the author are, first: acetate of pilocarpine has a surprising effect in the treatment of indigestion in horses; second, it is generally superior to all stimulating drenches, and even to sulphate of eserine; and third, it is entitled to take precedence among known remedies in cases like those referred to, in common practice.—*Rec. de Med. Vet.*

INDIGESTION AND INTESTINAL OBSTRUCTION RELIEVED BY PILOCARPINE.

By Mr. P. Waldteufel.

The patient was a strong and healthy horse, aged nine years. He had been suffering with indigestion for twelve hours, and notwithstanding the various forms of treatment which had been applied, was getting worse, his condition being such that the owner had decided to have him killed and prepared for the butcher.

The author, desiring to make some experiments with pilocarpine, and to watch the sedative effects of the drug, gave him a subcutaneous injection of one gram of a one-fortieth solution of nitrate of pilocarpine, followed by a second twenty minutes later. Being obliged to suspend the experiment for the time, by the pressure of other business, he returned some six hours later, expecting to find the patient in the last extremity. The animal was then lying down, with an extremely weak pulse, the mucous membranes pale, the abdomen extremely tympanitic, and the head continually turned toward the flank. There had been no passage from the bowels, and had been occasionally violent struggling. Three successive injections, similar to those previously administered, were immediately given. Fifteen minutes later an abundant salivation appeared, and the animal seemed to be quieter. His body was covered with perspiration, and his pulse was stronger, and, after half an hour, gasses began to be expelled by the anus. In the presence of this comparative improvement, the patient was, after receiving a rectal injection of mustard water, made comfortable for the night. The next morning the animal was found standing up, and ready to eat his breakfast. During the night he discharged an enormous mass of hard fæces, which stood piled in a heap behind him.

The three grams of the one-fortieth solution had done the work, first, by quieting the pain, through its sedative effect, and then by giving rise to a hypersecretion of the entire glandular system of the digestive canal, which, by lubricating the mucous membrane, had produced the softening and stimulated the expulsion of the excrementitial mass originally causing the obstruction.

Two similar cases are also recorded by Mr. Chauvain, with similar results and rapid recovery.—*Ibid.*

PERFORATION OF THE DUODENUM BY A PIECE OF WOOD.

By Mr. Mollereau.

This case is quite unique in respect to the cause which gave rise to the lesion which carried off the patient.

A mare kept in a stable between two horses which were suffering with typhoid fever (abdominal influenza) was one day found ailing, and presenting some slight symptoms of colic, with a dull appearance, and in a state of complete anorexia. Examination of her condition resulted in a diagnosis of pleurisy, which was suggested by the condition of the respiration, and by the signs revealed by auscultation and percussion, the pulse, besides these, being hard and full, and temperature 40°C. Treated accordingly, principally by injections of morphine, for the relief of the abdominal pains, the mare, however, died about forty-eight hours after the attack.

At the post-mortem examination the thoracic cavity was found to be healthy, but on exploring the abdomen lesions of extensive and acute peritonitis were exposed, with abundant effusion and extensive false membranes of recent formation. In searching for the cause of this peritonitis, the author found on the duodenum, at its great curvature, about opposite the opening of the ductus communis choledocus, a small fragment of wood, about twice the thickness and size of a match, being about ten inches long, with blunt ends, and somewhat flexible, engaged through an opening which it had perforated, and through which intestinal liquids had escaped, and thus given rise to the fatal inflammation. It is quite surprising that with its pliable condition, this splinter of wood had not broken in pressing against the wall of the intestine which it had perforated.—*Ibid.*

A CASE OF DIFFICULT PARTURITION.

By Mr. Grün.

The patient was a mare in labor. She was eighteen years old, and had had several deliveries without trouble. This time, when the contractions occurred, the extremities of the

fore legs of the fœtus appeared through the vulva, but the head remained invisible. Introducing the hand, the operator could feel a round, hard mass, formed by the neck, bent backward, and a little further the ears and the cranium could be touched. The nose could be seized by pushing back the fœtus, but the head could not be placed in good position, though the fœtus seemed to be small, and there was plenty of room for its passage. There was evidently a pathological deviation of the cervical vertebræ. The neck was secured with a cord, and strong traction being applied, one of the vertebræ was fractured and the fœtus readily extracted. The operation was through in about fifteen minutes. While the author was cleaning his hands he was hurriedly called back to the animal, which, by violent efforts had caused a prolapsus of the uterus. It was returned in place immediately, but the contractions returned more powerfully, and it seemed an impossibility to keep the organ in place, though the surgeon with his whole arm in the vagina and assisted by a man pressing against his shoulder, tried to resist the exit of the organ. The mare being prevented from lying down, the uterus was then plugged and packed with a large quantity of wet rags. This condition lasted for nearly an hour and a half, after which the contractions diminished gradually, and finally ceased. The removal of the rags was then effected, and after a few hours the os uteri began to contract, and the uterus was soon closely cleaned out. Though the author expected a fatal metritis as the result, the mare, a few hours after, was entirely well and eating. Since then she has again been delivered, without accident.—*Wochenschrift fur Theirheilkunde.*

TORSION OF THE UTERUS IN THE COW.

BY THE SAME.

The author believes that in cases of this nature, it is useless to lose time in studying the direction of the torsion, and considering whether the animal is to be rolled to the right or to to the left. He prefers the method of Goring, described by Franck: "The torsion being seldom sufficiently considerable to prevent the feeling of the envelopes, at least with one finger, they can be immediately emptied of their contents. This

is not always easy, and the membranes often escape the puncture by the finger. In this case, one must watch for a violent expulsive effort of the animal, which, by the pressure it produces, increases their resisting power and permits them to be more readily lacerated. The fœtus is, at that time, soon pushed back, in such a way that any part of it can be taken hold of, as, for example, a foot, and drawn back through the os. Reduced in size by the escape of its contents, the uterus can no longer maintain the motion of torsion. On the contrary, the twist diminishes to such an extent that the head and the other leg are easily secured. At that moment it is important to raise the hinder parts of the animal, and to increase the spiral formed by the uterine mass by a powerful extension of the arm which holds the fœtus. The animal, being on her back while she is down, is then turned slowly from left to right, and from right to left, until a favorable position is obtained to extract the fœtus.

The lacerations which may take place heal readily by the use of creolin.

Goring adds that "it is useless to speak of embryotomy, which plays a greater part in theory than in practice."

The author states that he has not performed embryotomy for years, but advises beginners to practise it rather than to use their strength in vain efforts. Embryotomy is an excellent exercise, and develops the manual dexterity of young veterinarians, but the practitioner who knows how to take advantage of the dimensions of a pelvis will think but little of it.—*Ibid.*

BIBLIOGRAPHY.

TRAITE DE ZOOTECHNIE GENERALE.—(Treatise of General Zootechny.) By Prof.. Ch. Cornevin. Paris. J. B. Balliere & Son.

Some years ago, during one of our trips to Europe, while visiting our beloved master, H. Bouley, and referring to our own humble efforts in behalf of our profession in the United States, he said to us: "You commit a great error if you fail to teach zootechny in your American schools. Zootechny progresses rapidly, and the day will soon come when the edu-

cation of a veterinarian who has not cultivated an acquaintance with that important branch of our specialty will be looked upon as but partial and incomplete."

What rapid progress has not this science made since those days, and how different the opportunities for its study now, from those of the days when only the excellent work of Professor A. Samson was accessible to the student? And what a stride it is, from the state of things of that day to the publication of this large work of Professor Cornevin! We do not know that any book of equal value can be found in any other language, but we feel confident that a translation of the *Trait de Zootechnie Generale* will become immediately imperative, and that, until then, the treasures that are to be found in its pages will remain lost to a host of those who are interested in the breeding and training of domestic animals, and the profit to be found in it. With this guide and help breeders may learn many of the valuable truths which the close observations of Professor Cornevin has so skilfully developed and registered in his book, and by its help the veterinary student and practitioner cannot fail to acquire an augmented stock of knowledge, fuller and truer than can be elsewhere obtained in the matters concerning which they are so often consulted, and in which it will be considered a shame if they are found deficient, and fail to answer intelligently and wisely the questions they will be asked. The space which we are able to give to the work of Professor Cornevin, we regret to say, will not allow of a general review. A critical notice, if such a thing were possible, would require to do it justice a special amount of technical knowledge and cyclopedic information of which we regret to say we are not the possessor. But, we can, without hesitation, say that the scheme and execution of the book has proved it to be an excellent contribution to veterinary literature. It is full of personal observations and rules in new theories and original ideas, propounded by one who has already earned and obtained in the scientific world, by the scope of his researches and possession of previous labors, a well-merited fame.

The book is divided into four principal chapters, treating in the first on domestic animals in the past and in the present;

in the second, of individuals and groups; third, zootechnic processes; fourth, zootechnic undertakings.

Each chapter treats its subject in the most thorough manner, and together they form a corpulent volume of nearly 1,000 pages, handsomely illustrated with beautifully colored plates, besides more than 200 wood cuts. It is published by Bailliere & Sons, and is, of course, well printed, and offered to the readers in that same handsome style which has for years past characterized the issues of this old publishing house.

NOUVEAU DICTIONNAIRE PRATIQUE DE MEDECINE, CHIRURGIE ET HYGIENE VETERINAIRES.—(New Practical Dictionary of Veterinary Medicine, Surgery and Hygiene.)—Begun by H. BOULEY and continued by A. SANSON, L. TRASBOT and ED. NOCARD.—Vol. XIX. Asselin & Houzeau: Paris.

Another addition to that extensive encyclopædia—and one which will do credit to its authors, viz., Professors Trasbot, Railliet, Nocard, Moussu and Kaufman, of Alfort; Cadeac and Peuch, of Lyons; Labat, of Toulouse, and Sanson, of Grignon. The following subjects are treated in this new volume: Rheumatism; Revulsives; Rubefaction; (Counter Irritation); The Rectum and its Diseases; Repercussion; Resolution; Resorption; Retention; The Kidneys, their anatomy, physiology and pathology; Rouget of Swine; Retivity; Phlebotomy; Parasites of the Kidneys and of the Respiratory Tracts; Nutritive Relation; Military Remounts; Reproduction; Reversion; Hoofs, etc., all of which are covered in the 564 pages of a plainly printed, but easily read volume.

VETERINARY POST-MORTEM EXAMINATIONS. By A. W. CLEMENT, V.S. (Sabiston and Murray, 916 6th Ave., N. Y.)

Some time ago we published from the pen of Dr. A. W. Clement, an extra of this little volume, which is now presented in its new and complete form. In the 64 pages before us some excellent advice is presented, and some valuable directions given in respect to the manner in which post-mortem examinations ought to be made in order to derive all the benefits that can be obtained by this mode of reading the book of cad-

averic pathology. We have on previous occasions promised good success to the author and ready sales to the publishers, and we are pleased to find that our prognosis promises to be well fulfilled, and that the exhaustion of the edition recently issued will soon necessitate a renewal of the work of the pressmen and binders.

PATHOLOGIE AND THERAPEUTIQUE SPECIALES DES ANIMAUX DOMESTIQUES, (Special Pathology and Therapeutic of the Domestic Animals) by DR. FRIEDBERGER and FROHNER—(French translation by PROF. CADIOT and J. N. RIES, with annotatians of Director Trasbot.) Asselin and Houzeau: Paris.

The second part of the first volume of this work has just reached us. Its topics are diseases of the urinary, the genital and the circulatory systems, and the diseases of the skin.

ELECTRICITY, its application in medicine, by WELLINGTON ADAMS, M.D. Geo. S. Davis, Detroit.

Two nice little volumes of the series of the "Bijou Library," initiating the reader into an interesting and important branch of therapeutics. They are well written as to text, neatly printed as to typography: agreeable reading as to the subject; and must form a valuable contribution to the great science of therapeutics. They cannot fail to be a valuable addition to the library of the veterinarian and the physician.

PROGRESS OF HIPPOPHAGY. By CHAS. MORST.
PRIVILEGES OF VETERINARIANS. By L. GARNIER.

Two pamplets of valuable interest to those concerned in the subjects treated.

OBITUARY.

WILLIAM DICKSON, V.S.

A TRIBUTE TO A DEAD FRIEND.—Recently elected assistant-chief of the Bureau of Animal Industry at Washington, D. C., William Dickson died suddenly on May 11, 1891.

"De mortibus nil nisi heue," true as it is, is not, however, the impulse for the following words to the profession. It is rather the exceptional case which this admirable man presented, that asks for a comment from one who knew him well,

He was a non-graduate of veterinary medicine, and he said so; but he was a man of superior education, of great common sense and original thought, and he impressed so at once. I met him first in a farmers' institute in Minnesota, answering questions on veterinary science. The promptness, ease, and simplicity with which he disposed of questions which would have puzzled many men full of college-wisdom, astonished me, and he had my sympathy right there. We afterwards spent together many hours in discussion of professional subjects, and although he was modest in his opinion of matters of a purely scientific nature, I, nevertheless, found him infinitely better posted than several veterinarians who boast of their diplomas.

Whatever may be thought of his call to this place in Washington, he was certainly eminently fitted for the particular work he seems to have been chosen, and he would have made a brilliant record.

I mourn in him the loss of a friend whom I dearly loved, and the profession to which *he* more justly belonged than others, loses a member of exceptional talent and rare gifts.

SCHWARTZKOPF.

LEMUEL C. CAMPBELL, D.V.S.

We have just received the sad news of thedeath of this young and promising veterinarian, which took place on the 20th of May. He was a kind, genial man, who though but recently in practice had already created for himself a large number of friends and patients. Dr. L. C. Campbell graduated at the American Veterinary College, class of 1883.

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Keystone Veterinary Medical Association was called to order at 8:30 P.M., Dr. W. H. Hoskins in the chair. The following answered roll call: Drs. Werntz, Weber, Webster, Hoskins, Sellers, Goentner, Kooker, Lentz and Dfake.

The minutes ot previous meeting were read and adopted. Dr. Hoskins, Chairman of the Legislative Committee, said the work was being carried on without much success. Dr. Schreiber failed to appear to read his paper on the subject of "Milk Inspection of Philadelphia."

Dr. Sellers said milk and meat inspection should be more rigid in New Jersey as well as in Philadelphia; as he had seen cattle in Camden that come over to Philadelphia to be slaughtered and the meat used in the manufacture of bologna sausage, that were in a tuberculous condition and not fit for food.

Dr. Werntz says lots of diseased meat is brought in from surrounding dairy farms and sold in our markets. We should have a law against it and the law should be enforced. He was one to introduce a bill before the Legislature, in which a veal must be twenty days old and weighing no less than sixty pounds before being placed upon the market for food. He says he has seen cattle too sick to walk, brought in after dark, slaughtered and put on our markets.

Dr. Weber says he can drink milk in Philadelphia with perfect safety, due to the present milk inspection of the city. He stated that the officials are examining different samples of milk under the microscope at the Public Buildings for the Koch bacillus.

Dr. Goentner said Dr. Weber refused to drink milk at Lancaster when he was there as his guest. Dr. Weber replied that he did not drink it yet when at home in Lancaster.

Dr. Goentner asks, has the tuberculous bacillus been found in milk? Dr. Hoskins answers yes. It has been found in milk without any lesion of the gland being detected. Dr. Kooker thinks milk inspection as it is now being carried on, matters little to the veterinarian. Trying to find the bacillus in milk is not a preventative, but simply a scientific investigation; that the Keystone Veterinary Medical Association and State should do more to forward the matter, and that we should have a set of resolutions up before the next Legislature, in which the inspection should take place at the farm. He thinks every practitioner should have his local district and be paid for the same; the inspections to take place at certain periods of time. To get these resolutions passed, we should go in a body, physicians, Board of Health, and veterinarians.

He wants resolutions passed to express to the public the views of the Keystone Veterinary Medical Association.

He, as Secretary of the State Association, has appointed Dr. Hoskins to read a paper at the next meeting on the subject of "Milk and Meat Inspection."

Dr. Sellers thinks water the least harmful of any of the constituents of milk. Dr. Doremus in his lectures says, test for sugar, as the sugar seldom varies; the solids vary, and the water can be detected. Dr. Weber thinks there should be better hygienic inspection.

Dr. Hoskins thinks the inspection is clearly from a commercial standpoint. Coloring matter was used; also said to keep it sweet. The present inspection is good, but deficient in regard to milk. The work should be carried further, put in resolutions, the medical journals, newspapers, etc.

Dr. Kooker suggests the President appoint a committee to draw up a set of resolutions, giving views of this Association. Moved and seconded. Carried.

The President appointed Dr. Huidekoper, Chairman: Drs. Werntz, Weber, Goentner and Kooker.

Dr. Hoskins cited a case of a green western horse suffering with influenza, having his tail tied up very tight. The tail swelled to an enormous size, which was followed by twenty-three distinct abscesses and a slough at the end, with a complete relaxation of the sphincter ani, semi membranosis and semi tendinosis muscles, great lameness following, hardly able to stand, weak pulse, high temperature. Is now convalescing, and has a new growth of hair covering the tail.

He spoke of a case where no diagnosis was given. A large bunch or swelling appeared on the line of the tarsis and metarsis in one night, very painful on pressure, with excessive lameness; was treated two weeks, and, to all appearances, was perfectly sound. With slow driving she drove sound. On speeding she was again thrown into the same condition as at first. The same treatment brought the repetition as above.

Dr. Goentner spoke of a filly having a temperature of 104°, respiration 32, regurgation of the jugular vein. Diagnosis, endocarditis. After thre weeks treatment is still in the same condition, with a small amount of pneumonia in the right lung.

Dr. Weber said it was pleurisy in the second stage.

The Vice President's position being empty by the resignation of Dr. Ridge, Dr. Werntz was nominated. It was moved and seconded he be elected by acclamation, the chair to cast the vote. Carried.

The meeting then adjourned.

W. H. HOSKINS, *President.* M. W. DRAKE, *Secretary.*

SOUTHERN VETERINARY MEDICAL ASSOCIATION.

The first meeting of the Southern Veterinary Medical Association will be held at Linck's Hotel, Nashville, Tenn., on July 4th.

Respectfully yours,

E. R. FORBES.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The members of the United States Veterinary Medical Association and the profession in general are given notice that the Trunk Line Association and Southern Passenger Association have agreed to concede to all members attending the convention at Washington, Sept. 15th to 17th, 1891, the $1\frac{1}{3}$ rates of fare from all points in their districts.

This meeting will afford interest of a rich character to every member of the profession. The subject of Food Inspection and Animal Diseases, with special reference to their importance to man, will receive at this meeting the most thorough consideration ever given by our Association. The present era in sanitary science and laws throughout the civilized world give additional interest to these subjects at this time.

Dr. C. C. Lyford of Minnesota will read a paper on "Barren Mares." This subject, of so much interest to those members residing in breedidg distrists, will be an additional incentive. Other papers have been promised the committee of arrangements and will be announced at a later date.

The eastern and central members ofthe Association are most earnestly requested to be in attendance at this meeting to greet the large delegation of Western members and to complete more fully the thorough amalgamation of the entire profession. The memories of the grand meeting in Chicago should be revieved at Washington, and a hearty welcome should be extended to those who did so much to make our trip to the West so profitable and pleasant.

W. HORACE HOSKINS, *Secretary.*

12 So. 37TH ST., PHILADELPHIA, PA.

OHIO AND MICHIGAN VETERINARY ASSOCIATION.

A joint session of the Veterinary Associations of the States of Ohio and Michigan will be held in Abstract Hall, in the City of Detroit, on the evening of July 22d and the following day.

An excellent programme is being prepared, and all are cordially invited to meet with us.

WM. H. GRIBBLE, Sec. Ohio State Association.

COLLEGE COMMENCEMENT.

ONTARIO VETERINARY COLLEGE.

On March 28th, the exercises of the sessions 1890–'91 were closed at this institution, and the following gentlemen graduated:

Alexander, John E.....Masconchie Rapids, P. Q.
Anewalt, M. W.....Pleasant Hill, Ohio.
Appleyard, Edward.....Grand Valley.
Augustin, David T.....Calton.
Barnes, Frank M.....St. Thomas.
Barr, J. W.....Milverton.
Batchelder, H. M.....Warrensburgh, Ill.
Belaire, G. H.....Pembroke.
Boothby, Jas. T.....Altona, Ont.
Bowen, Hamilton.....North Fairfield, Ohio.
Bowlby, Percival T.....Port Dover.
Brossman, C. W.....Lower Heidelberg, Penn.
Brown, Alexander H.....Pipestone, Minn.
Brown, Bruce E.....St. Catharines.
Brown, Wm. A.....Pipestone, Minn.
Bryan, Robert W.....Lexington, Ky.
Burdick, Wm. M.....Gravesend, Ont.
Burkholder, S. G.....Denver, Penn.
Burkholder, Samuel.....Virden, Man.
Burneson, James C.....Mansfield, Ohio.
Crowfohr, Anderson.....Brampton.
Callender, E. H.....Kirkton, Ont.
Carl, Lewis W.....Campchase, Ohio.
Carnes, Will E.....Greenwood, Ind.
Claussen, William R.....Waupaca, Wis.
Clevenger, Walter E.....Union City, Indiana.
Cobleigh, E. J.....Parkhill, Ind.
Collins, S. J.....Green River, Ont.
Connolly, Vilroy M.....Owatonna, Minn.
Corlis, Wilson S.....Carthage, N. Y.
Crawford, Eli M.....Brampton.
Creamer, John P.....Regina.
Crewe, Wilton F.....Hillsboro, North Dakota.
Cunnington, W. J.....Parkhill, Ont.
Cole, Louis M.....Toledo, Ohio.
Drury, James.....Toronto.
Dunn, Lewis J.....Erie, Penn.
Dietz, Joseph H.....Owatonna, Minn.
Edmonds, Charles E.....Fingal, Ont.
Everist, James Cicero.....Arkona, Ont.
Findlay, Alex.....Toronto.
Fitzgerald, George M.....Chiselhurst, Ont.
Foster, J. E.....Mt. Eaton, Ohio.
Frank, Albert A.....Great Valley, N. Y.
Freed, Byron M.....Sharon, Pa.
Genung, John A.....Slaterville Springs, N. Y.
Gibb, James Mitchell.....Kingston, Jamaica.
Gillies, Duncan R.....Moffatt, Ont.
Gray, Whitfield.....Newton, N. Y.
Galbraith, W. C.....Brampton.
Hackett, Charles H.....Linwood, Ont.
Hagesman, John M.....Lynedoch, Ont.
Hanawalt, D. C.....Frankfort, Ohio.
Hanisch, J. A.....Lake City, Minn.
Hodgins, J. E.....Mooreville, Ont.
Holmes, Ernest Burwell.....London, England.
Honan, J. H.....Delphi, Ind.
Hopkins, Arthur Geo.....London, England.
Harrison, Richard.....Bad Ax, Mich.
Jobson, John A.....Franklin, Penn.

Johnston, Herbert J.....Jasper, Ont.
Johnston, Joseph B.....Gallipolis, Ohio.
Kane, Elisha K.....Warren, Ill.
Kaul William.....St. Mary's, Penn.
Keeler, Allen Z.....Harleysville, Penn.
Kelley, James S.....Irvine, Ill.
Kelley, Robert L.....Irvine, Ill.
Kershner, Peter I.....Bernville, Penn.
King, Joseph E.....Palmyra, Ill.
Kinter, Joseph Brady.....Marion Centre, Pa.
Klotz, J. W.....Arcadia, Ind.
Kyle, Foster J.....Cedarville, Ohio.
Lamberson, A. F.....Whitehall, Wis.
Langford, D. E.....Mason City, Iowa.
Lyon, Henry C.....Grandon, Dakota.
Lewis, David.....Omemee.
McClellan, Clarence.....Greenwood, Ind.
McCurdy Wm. Burtton.....Hutchison, Kansas.
McLoughry, R. A.....Wolseley, N. W. T.
McLaren, W. H.....Fargo, North Dakota.
Macdonald, Robert.....Emerson, Man.
Machan, Alex.....Mitchell, Ont.
Marsack, H. L.....Tunbridge Wells, England.
Moore, George W.....Burgessville, Ont.
Morrison, Andrew Smith.....Bristol, P. Q.
Morrissey, Thomas.....De Witt, Iowa.
Mountford, John Joseph.....Blenheim, Ont.
Moyer, W. H.....Pottsville, Pa.
Manley, H. M.....Arkansas City, Kansas.
Neale, Geo. C.....Parkhill, Ont.
Neilson, W. G.....Battleford, N. W. T.
Nixon, W. A.....Brampton.
Ovens, Hurbert A.....Maple Lodge, Ont.
Piatt, D. Augustus.....Lexington, Ky.
Palmer, Charles F.....Wooster, Ohio.
Parker, A. L.....Providence, R. I.
Parslow, J. G.....Clarinda, Iowa.
Pendergast, Jas. A.....Phœnix, N. Y.
Porter, Edmond C.....Waterford, Penn.
Potteiger, Albert R.....Bermville, Penn.
Price, J. O. F.....Sibley, Iowa.
Pullen, Wm. H.....Lebanon, Ohio.
Rhodes, Jackson.....Uxbridge, Ont.
Rich, Theodore S.....Avon, N. Y.
Robb, George.....London, Ont.
Robinson, Ralph B.....Brooklin, Ont.
Rollins, John W.....Lancaster, South Carolina.
Robinson, Nathaniel.....Dresden, Ont.
Ronan, J. L.....Auburn, N. Y.
Sanson, Alexander.....Petrolea.
Shadwell, W. H.....Burgess Hill, Sussex, England.
Shain, Charles.....London, Ont.
Shirley, Victor W.....Waterford, Ont.
Sisson, Septimus.....Manhattan, Kansas.
Smith, Alexander Esdale.....New Perth, P. E. I.
Smith, Richard H.....St. Mary's.
Stinson, W. Spence.....Orangeville.
Storey, Mark A.....Princeton, Ill.
Sowers, John B.....Greencastle Penn.
Taylor, William R.....Winnepeg.

Thacker, Thos.	Portage du Fort, P. Q.
Teeple, Sherman L.	Napoleon, Ohio.
Thompson, Joseph A.	Elginfield, Ont.
Thompson, Samuel	Roseneath, Ont.
Tolmie, S. F.	Victoria, B. C.
Turner, W. George.	Pt. Edward.
Thompson, Joshua P.	Upper Grove, Ont.
Tilt, Fred.	Brampton.
Vanderslice, Delo.	Salem, Ohio.
Vliet, George B.	Hackettstown, N. J.
Vulliamy, Hugh F.	Ipswich, England.
Walsh, Ernest J.	Oakville.
Ward, U. E	Overton, Neb.
Wadsworth, W. J.	Murray, Ont.
Wilson, A. M.	St. Mary's.
Williams, Joseph E.	Fingal, Ont.

CORRESPONDENCE.

A CORRECTION.

My attention has been called to a statement appearing in the report of the Keystone Veterinary Medical Association (AMERICAN VETERINARY REVIEW, Vol. XV. p. 119) which it appears, might well leave an erroneous impression in the minds of some, regarding the requirements for admission to the United States Veterinary Medical Association. Dr. Weber is reported as asking, "Are the graduates of agricultural colleges recognized by the United States Veterinary Medical Association as regular graduates?"

In reply, Dr. Hoskins is reported as stating "Yes, that they were admitted to membership at Chicago, Sept. 17, 1881."

The date given is evidently wrong, as all veterinarians know, and it seems safe to say that the entire answer of Dr. Hoskins must have been erroneously reported by the Secretary of the Keystone Veterinary Medical Association.

The Constitution and By-Laws of the United States Veterinary Medical Association explicitly state that only graduates of a "regularly organized and recognized Veterinary or Medical School," can be admitted to membership and thus places it beyond the power of the Association to admit men to membership on agricultural diplomas.

W. L. WILLIAMS, V.S.